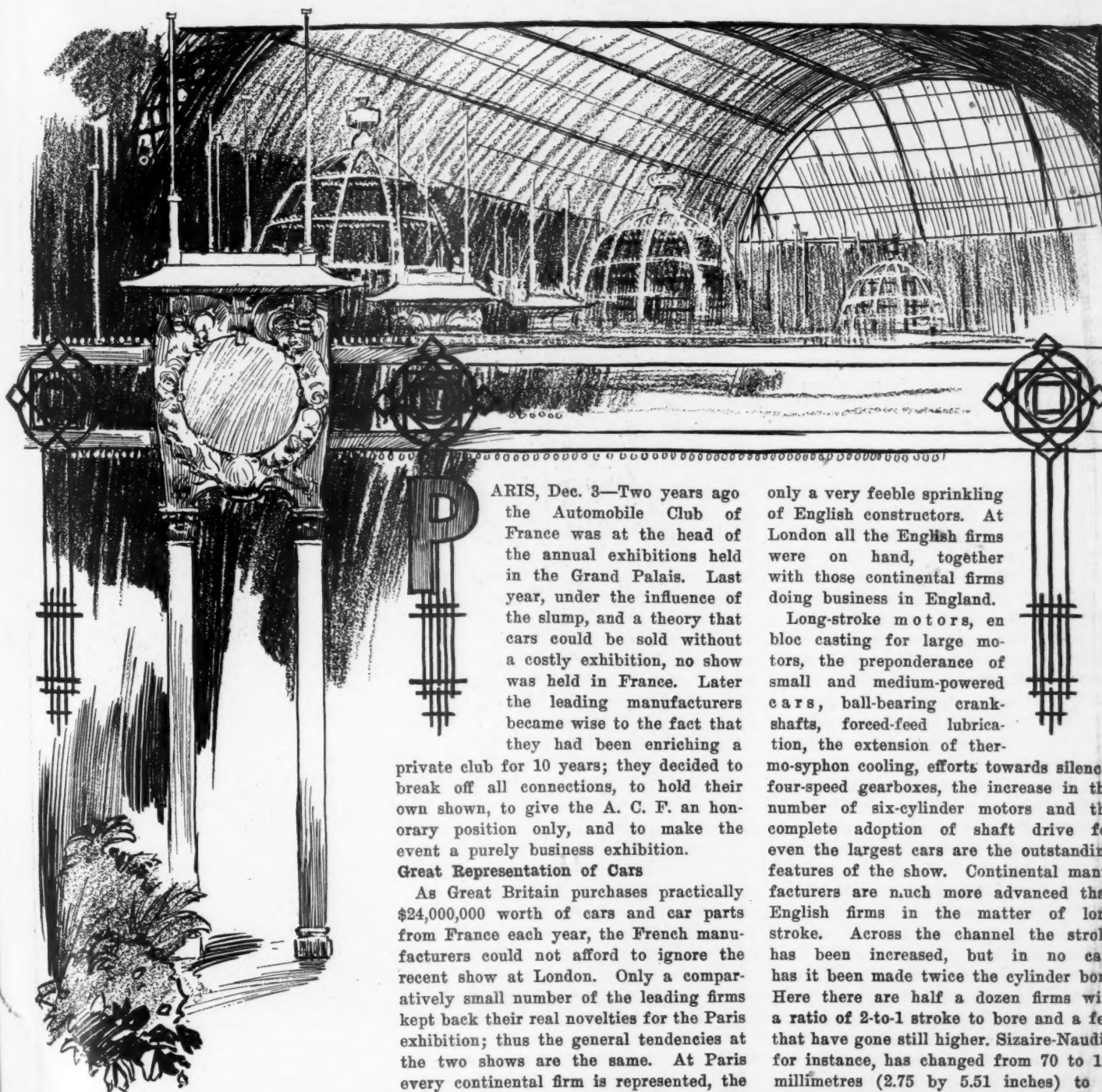


MOTOR AGE

PARIS SALON REVIVES FRANCE'S SHOW GLORY



PARIS, Dec. 3—Two years ago the Automobile Club of France was at the head of the annual exhibitions held in the Grand Palais. Last year, under the influence of the slump, and a theory that cars could be sold without a costly exhibition, no show was held in France. Later the leading manufacturers became wise to the fact that they had been enriching a private club for 10 years; they decided to break off all connections, to hold their own shown, to give the A. C. F. an honorary position only, and to make the event a purely business exhibition.

Great Representation of Cars

As Great Britain purchases practically \$24,000,000 worth of cars and car parts from France each year, the French manufacturers could not afford to ignore the recent show at London. Only a comparatively small number of the leading firms kept back their real novelties for the Paris exhibition; thus the general tendencies at the two shows are the same. At Paris every continental firm is represented, the countries being France, Germany, Italy, Belgium, Austria, and Switzerland, with

only a very feeble sprinkling of English constructors. At London all the English firms were on hand, together with those continental firms doing business in England.

Long-stroke motors, en bloc casting for large motors, the preponderance of small and medium-powered cars, ball-bearing crankshafts, forced-feed lubrication, the extension of thermo-syphon cooling, efforts towards silence, four-speed gearboxes, the increase in the number of six-cylinder motors and the complete adoption of shaft drive for even the largest cars are the outstanding features of the show. Continental manufacturers are much more advanced than English firms in the matter of long stroke. Across the channel the stroke has been increased, but in no case has it been made twice the cylinder bore. Here there are half a dozen firms with a ratio of 2-to-1 stroke to bore and a few that have gone still higher. Sizaire-Naudin, for instance, has changed from 70 to 120 millimetres (2.75 by 5.51 inches) to 70 by 170 millimetres (2.75 by 6.69 inches), or a ratio 2.4-to-1; and Hispano-Suiza has

A UNIFORM SYSTEM OF DECORATION IS USED IN THE FRENCH SALON

increased from 80 by 140 to 80 by 170 millimetres, of in inches, from 3.14 by 5.51 to 3.14 by 6.69 inches. These are the highest ratios to be found in the exhibition for pure touring cars. Among the firms having a stroke twice the bore are Gregoire, Le Gui, Sautter-Hale, Labor, Chapuis-Dornier, and Lion-Peugeot. Among such leading firms as Renault, Panhard, Delaunat-Belleville, Brasier, Clement, Darracq, Mors, etc., the ratio has not got beyond 1.5 or 1.6-to-1. The point to notice, however, is that there is not a firm in existence which has not increased the stroke of its standard models in a certain measure. As already stated in these columns, the paramount reason for the long-stroke motor is the horsepower tax and also the tax on gasoline. The long-stroke is claimed to be economical on fuel.

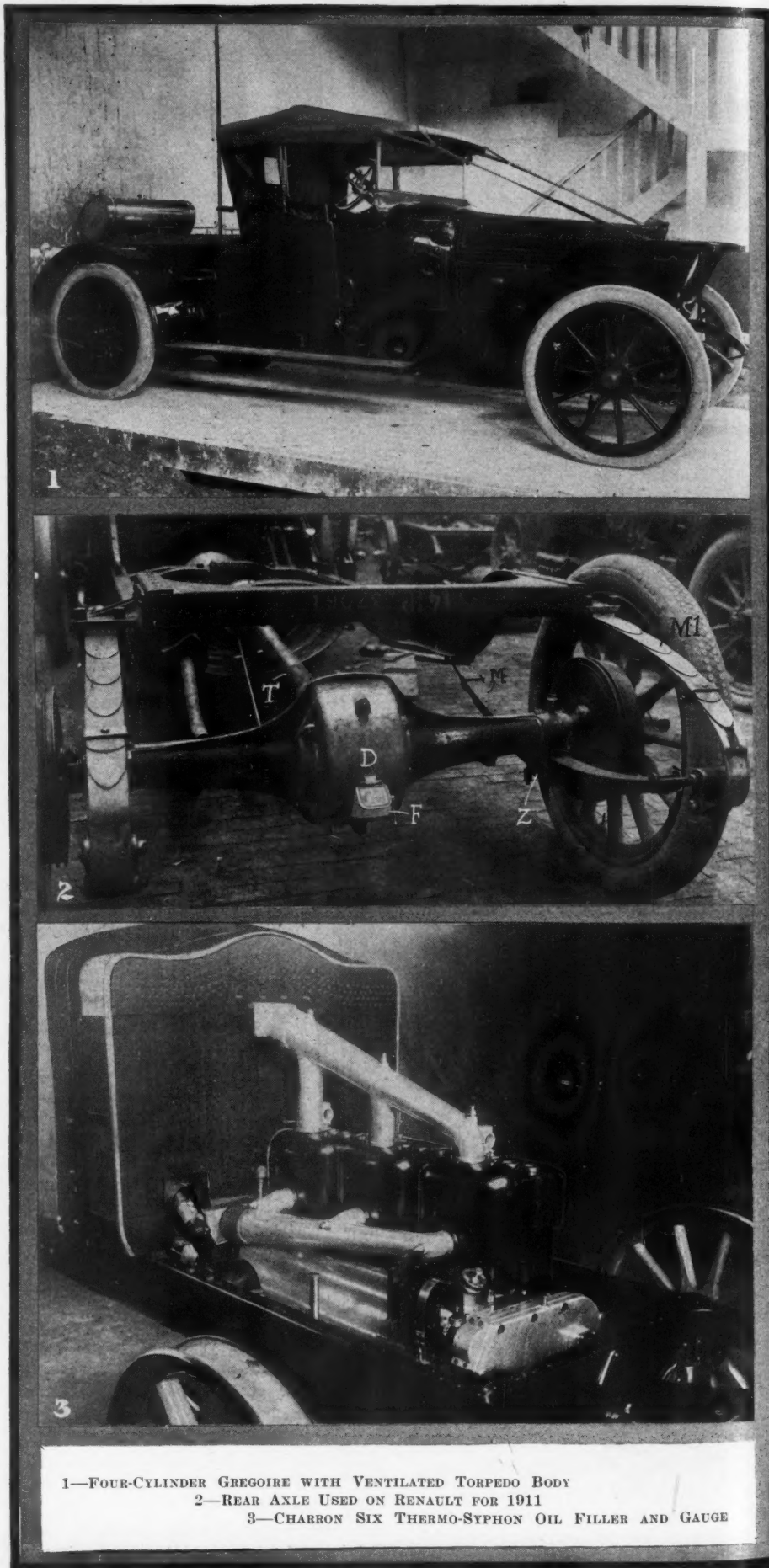
Block Casting of Cylinders

Block casting of the cylinders has won its position. After seeing six cylinders as high as $3\frac{1}{2}$ inches bore cast in one block, it cannot be denied that this method has the approval of engineers. The models are to be found on such important stands as Panhard, La Buire, Delage, etc. From 80 millimeters (3.14 inches) bore down it has now become the general rule to cast all four cylinders together. Monobloc casting has been adopted with the combined view of simplifying the motor and reducing overall area. Ball bearings have been adopted to assist in this latter object. As an instance, the Sautter-Harle Co. has produced a 75 by 150 millimeter (2.95 by 5.90 inches) six-cylinder motor having two ball bearings and a central plain bearing for the mainshaft, the overall dimensions of which are identical with the firm's four-cylinder of 90 millimeters (3.54-inch) bore. Either motor can be fitted on the same chassis. Ball bearings have been adopted merely to reduce overall dimensions. Delage, on his monobloc six-cylinder, has adopted a central ball bearing in order to gain the space which would be necessary for a plain bearing of sufficient bearing surface. Sizaire-Naudin on the 70 by 170 millimeters (2.75 by 6.69 inches) four-cylinder, Bugatti, on a four-cylinder monobloc, Bozier, on a four-cylinder monobloc, Darracq, on the 80 by 120 millimeters (3.14 by 4.72 inches), Labor, on all models, are some of the firms now making use of ball-bearing crankshafts. The Sautter-Harle six is one instance in which the ball bearings are not confined to the crankshaft, but are continued throughout the motor, camshaft, magneto and pump shafts, lubricating pump, in fact, everywhere with the exception of the central bearing.

Castings in Sixes

With a view to keeping down length, a few firms have adopted V casting for six-cylinder motors in preference to bloc casting in Indian file. The most notable example is a Delahaye, with a six-cylinder V motor. Another example is the Aries company with six-cylinder motors of 60 by 100 millimeters (2.36 by 3.93 inches),

Some Leading French

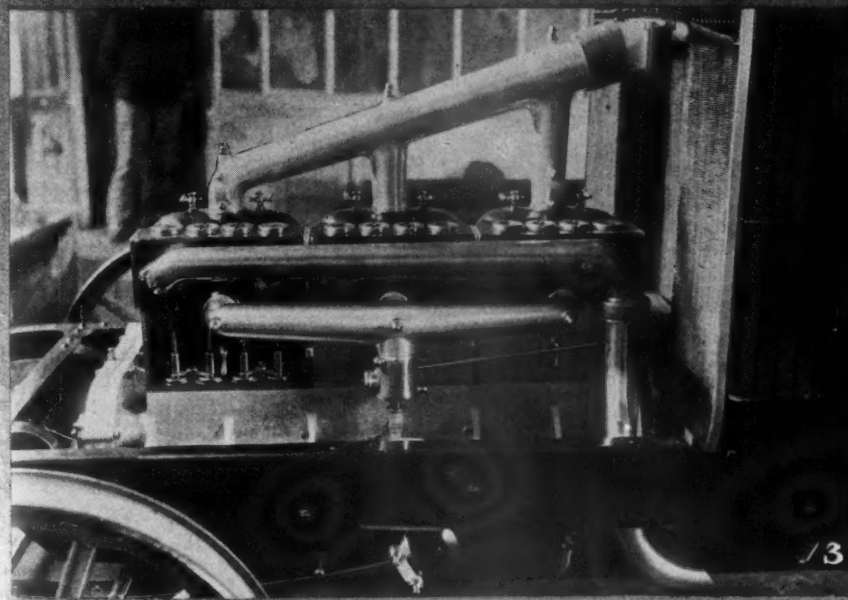
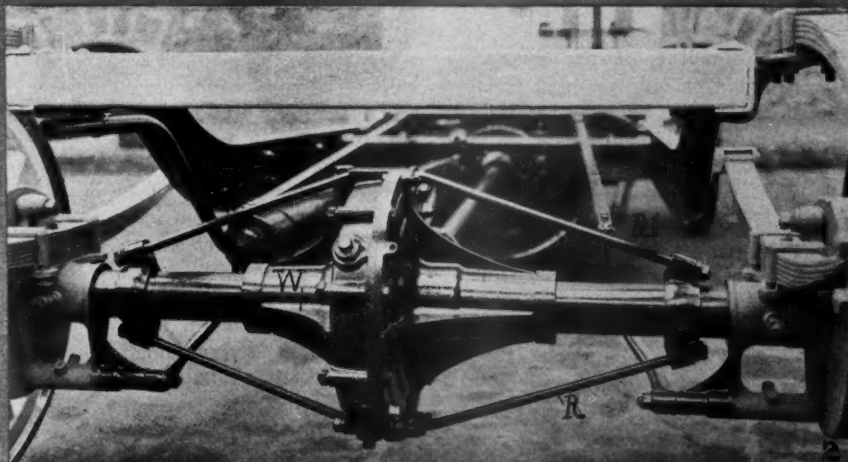
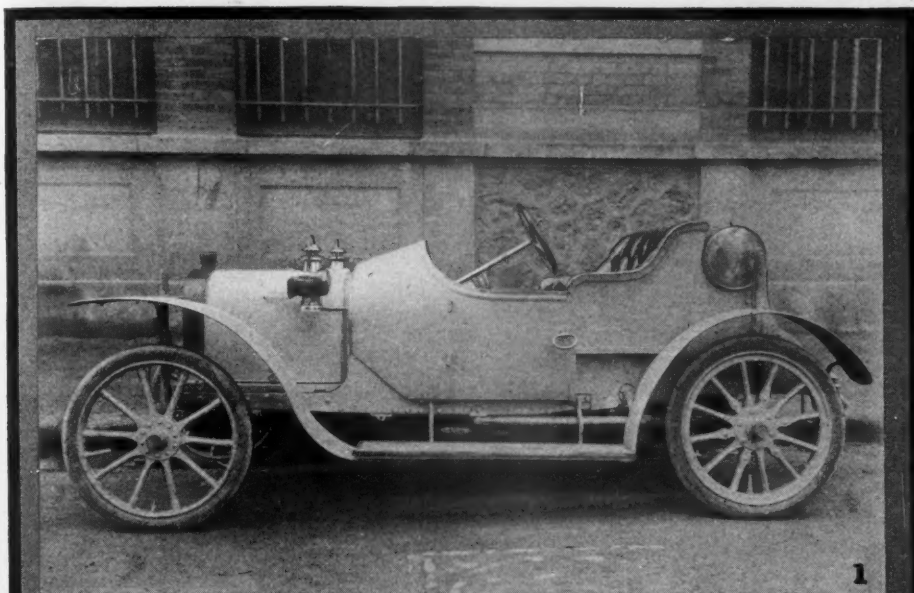


1—FOUR-CYLINDER GREGOIRE WITH VENTILATED TORPEDO BODY

2—REAR AXLE USED ON RENAULT FOR 1911

3—CHARRON SIX THERMO-SYPHON OIL FILLER AND GAUGE

Body and Motor Types



1—BOZIER SINGLE-CYLINDER RUNABOUT SEEN IN PARIS SALON
 2—REAR AXLE USED ON PANHARD FOR THE COMING SEASON
 3—CHARRON SIX USING THERMO-SYPHON COOLING WITHOUT FAN

and 75 by 120 millimeters (2.95 by 4.72 inches) cast in one bloc with their cylinders inclined only $7\frac{1}{2}$ degrees from the vertical. It is a design that has been adopted for over 2 years to small four-cylinder motors, but has only just been applied to six-cylinder cars. The valves are in pockets on the outside, but instead of intakes on one side and exhausts on the other, there are three intakes and three exhausts on each side, with three sparking plugs down each side.

Although there are more six-cylinder motors than ever before, and indeed very few firms that have not adopted a six, there is not a single instance of a four-cylinder model having been dropped to make room for a six, and not a single firm producing sixes exclusively.

Thermo-Syphon Increases

The extension of thermo-syphon cooling is remarkable. Once adopted, there is not a single firm having gone back to pump circulation, and the firms that have tried it on their smaller models have gradually extended it to the larger cars. The Charron company, after using thermo-syphon on small cars, has fitted it to a six-cylinder model of 80 by 120 millimeters (3.14 by 4.72 inches) bore, and even have abolished the belt-driven fan formerly carried within the dashboard radiator. There are not even vanes on the flywheel, and although the under shield is made a close fit, there is no forced draught through the radiator. A similar case is to be found on a large Leon Bolle six-cylinder, of apparently 90 millimeters (3.54 inches) bore, with thermo-syphon circulation; here, however, a belt-driven fan is used. The two examples are significant of the tendency of European constructors.

While abolishing the pump for the water circulation, most manufacturers have taken it up for lubrication. Opinion is still divided, but the tendency is strongly towards forced-feed lubrication throughout the motor, the oil being drawn from the crankcase base, delivered to the main bearings, through the bored crankshaft for the connecting rod ends, or by external leads where there is no central bearing, and even to the wrist pins under pressure. Renault has adopted this system for all 1911 models, thus abolishing the sight feed let into the dashboard and even doing away with the pressure indicator.

There is a diversity of opinion as to the best type of pump or its best position. In the majority of cases it is mounted on the rear end of the camshaft, but where the radiator is on the dashboard it has been moved forward to the forward extremity of the shaft, as on the new Charron models. The majority carry it within the base chamber, driven off the center of the camshaft by worm gearing, as on the Renault and the Gregoire, while others place it at the base of the motor, but outside, with a view to greater accessibility, as on the Sautter-Harle, Chenard-Walcker and others.

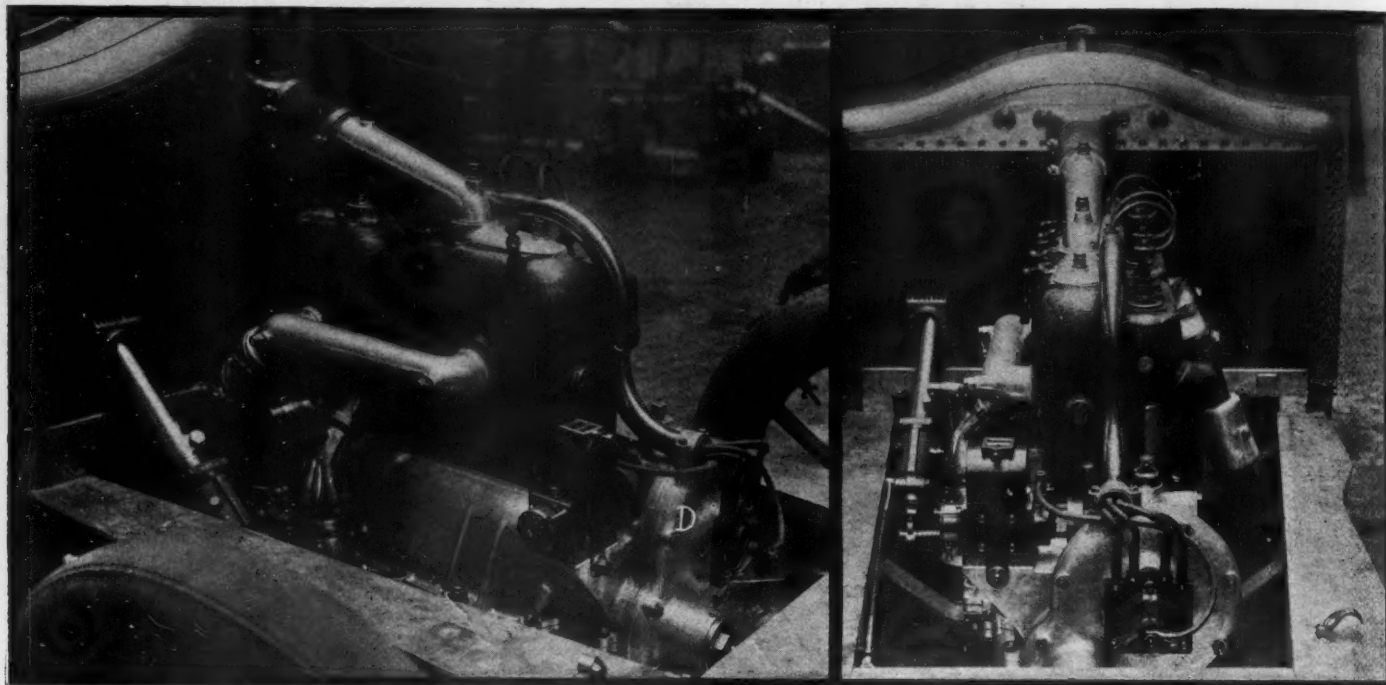


FIG. 1—TWO VIEWS OF RENAULT FOUR-CYLINDER SHOWING NEW CARBURETER, NEW POSITION OF MAGNETO AND IGNITION FEATURES

Since the adoption of the Knight motor on this side, the demand has been for greater silence. It is a quality that is valued more highly in England than on the continent of Europe, and although continental manufacturers have been obliged to pay heed to the popular demand, they have not studied the question so closely as the Englishman. As one French manufacturer declared: "The French owner asks for an absolutely silent motor, then persists in driving with an open exhaust." There is considerable truth in it, for one of the most silent motors, with light springs on the tappets, encased valve stems, silent chain drive for the cam and magneto shafts, and efficient muffler, is almost invariably driven by its owners with open cut-out. However, the fashion has to be followed, and there are very few cars without enclosed valves and the number of those with silent-chain drive for the camshaft or shafts is about a dozen, with a possibility of an extension in the near future, so far as can be gathered.

Worm drive and front-wheel brakes, two strongly British features, have not met the approval of continental manufacturers. Outside the English section there is not a worm drive at the show and there is an equal lack of front-wheel brakes. Wire wheels are offered when specially requested, but they are not made a standard feature by any firm. Continental manufacturers, who cling to the chain for the highest powered cars, have practically abandoned it in favor of shaft drive. There is no uniformity in rear axle construction and just as little in the matter of distance rods and torque rods. It will probably be found that the most popular method is to carry the propeller shaft in a torque tube, as is now done by Renault, in place of the stay. This is an imitation of a growing American practice.

Springs are lengthened, are generally of the three-quarter elliptic type, and in a few cases, as on the Renault, have their seating under the axle, not above it. It is becoming common to shorten the upper portion of the three-quarter elliptic in order to avoid side sway. Offsetting of the springs has also been adopted, especially for the platform type, thus effectively preventing any tendency to roll when heavy bodies are carried. This method has also been adopted with the three-quarter elliptic type.

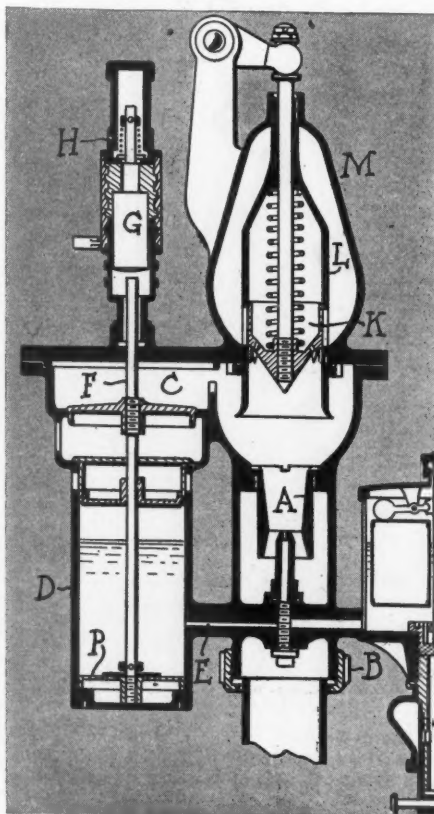


FIG. 2—RENAULT CARBURETER

The high reputation secured by Renault, both at home and abroad, invests the new models of this firm with more than ordinary interest, in view of the present tendencies of European manufacturers. The increased ratio of stroke to bore, which was first made apparent on one model last year, has been extended to all cars for 1911. Thus the 14-horsepower four-cylinder now measures $3\frac{1}{2}$ inches bore by $5\frac{1}{2}$ inches stroke, being a ratio of 1.55-to-1; an 18-horsepower six-cylinder has bore and stroke of 3.1-10 by $5\frac{1}{2}$ inches; a 35-horsepower four-cylinder measures 5.1-10 by $6\frac{1}{2}$ inches, and the highest ratio is 3.9-10 by $6\frac{1}{2}$ inches adopted for both the 20-horsepower four-cylinder and the 40-horsepower six-cylinder models. This gives a ratio of 1.6-to-1 of stroke to bore.

In the main features the Renault motor remains unchanged. Cylinders are in pairs, with valves on one side, but these latter are now enclosed. The position of the magneto has been slightly altered, although still carried across the front of the motor; the separate high-tension distributor D, Fig. 1, is now mounted on the extremity of the camshaft, thus abolishing one gear. Thermo-syphon water circulation is naturally adhered to, with slight changes in the form of the radiator, all the angles now being rounded off and the height slightly decreased with a view to harmonizing better with the lines of the bonnet and the torpedo bodies now employed.

Keeping pace with the general European tendency, Louis Renault has adopted forced feed lubrication for all 1911 models. This has been a feature of some of the large cars for 1910, but has not previously been adopted to motors of 14 horsepower and less. The base of the crankchamber forms an oil tank, from which the lubricant is drawn by a pump

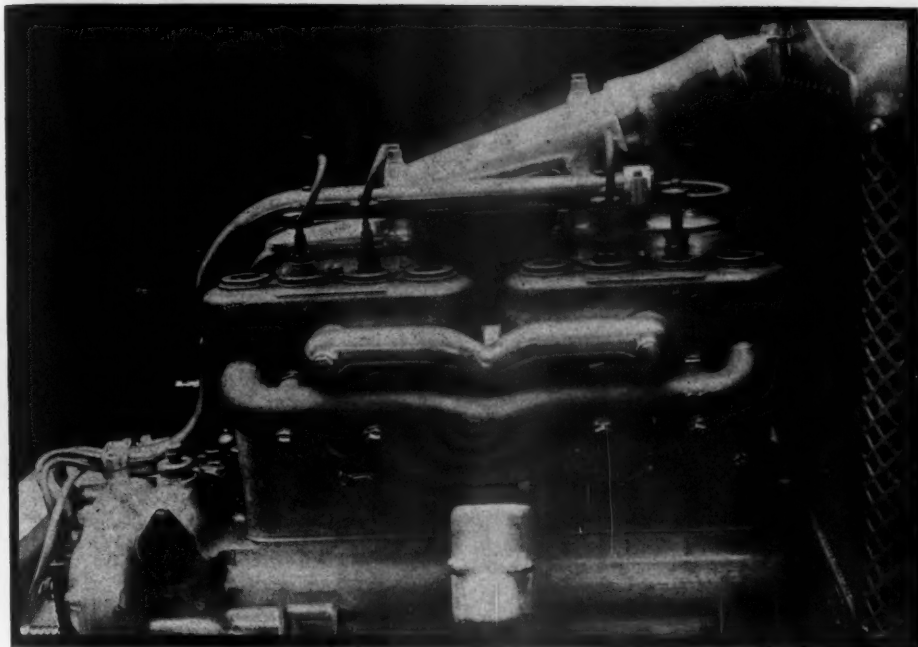


FIG. 3—VALVE SIDE OF RENAULT WITH ENCLOSED VALVE SPRINGS

working off the camshaft, delivered under pressure to the three main bearings, and through the bored crankshaft to the lower connecting rod ends. On the new models the oil tank extends the whole length of the crankchamber, thus giving an increased capacity while increasing the ground clearance. The filler is on the valve side of the motor, the filler cap being provided with a stem descending into the base of the oil reservoir and immediately indicating the amount of lubricant available. There is no external oil pipe, no separate oil tank, and not even a pressure indicator, thus leaving the dashboard clear. Verification of the oiling is assured by means of a special breather on the front end of the crankcase. This is provided with a glass face, and carries a tube into which all the oil is pumped on its way to the main bearings. The oil passing through the tube is proof that the bearings are receiving attention. The glass tube has the further advantage of revealing the viscosity of the oil in circulation.

Throttling of the mixture is now done in the carbureter, and not in a separate chamber near the intake ports. This allows the intake pipe to be carried up between the two groups of cylinders, Fig. 1. The carbureter is a type that has been adopted to some of the largest cars for 1910, but is now fitted to all models with slight modifications. The auxiliary air valve C, Fig. 2, operates in a chamber D containing gasoline; the primary air intake B is warmed by means of a bypass from the exhaust passed beneath the motor. An arrangement is now provided, by means of the knob on the center of the steering column, for preventing the opening of the additional air valve and at the same time for increasing the amount of hot air supplied to the carbureter. The contrary combination of more additional

air and no hot air can also be accomplished by the same throttle. This abolishes the small lever which was formerly mounted on the dashboard. There is no throttle on the steering wheel, but immediately below it is the well known type of lever allowing of minimum setting of the carbureter. Control is thus reduced to the operation of an accelerator pedal. The carbureter nozzle is inside a venture passage A.

The outstanding feature of the chassis is the adoption of a one-piece forged rear axle for all models from 14-horsepower upwards. The axle, page 2, which is bored out to receive the driving shafts, has its differential D housing in two parts, the forward portion being a steel forging, and the rear half, D1, forming an inspection cover, is an aluminum casting. In this

rear portion is a new type of oil filler F, provided with a large-sized hinged cover opened by the operation of a lever and kept closed by an internal arrangement of levers. A similar oil filler F1 is fitted to the gearbox, Fig. 4, and to the aluminum housing enclosing the universal joint back of the gearbox. The pressed steel and tubular torque rods which have been employed on previous models have now been abolished in favor of a torque tube T receiving the propellershaft.

Brakes Have Been Modified

Both sets of brakes have been modified. The differential brake, Fig. 4, is of the external type, the two shoes S and S1 being very broad, ribbed and operated by a double cam mounted on a shaft passing through the base of the gearbox. The emergency brakes enclosed within drums on the rear wheels are operated through a differential gear carried within the aluminum housing surrounding the universal joint. All the larger models are now fitted with four-speed gearboxes, this move being in harmony with the general tendency of European constructors. Three-quarter elliptic springs, page 2, are now employed, with the spring seating Z under the rear axle; the semi-elliptic portion M of the spring is very much lengthened and the upper portion M1 is shortened in order to diminish side swaying of heavy bodies. The wheelbase has been increased on practically all models, the 14-horsepower having 133 inches, with the tread increased to 56 inches. Changes in the motor base have made it possible to use a straight front axle, giving an increased road clearance. The sector carrying the change speed and brake levers has been made much more compact, the end of the levers being encased by a circular aluminum housing, this being the only projection on the side members.

Probably 50 per cent of European

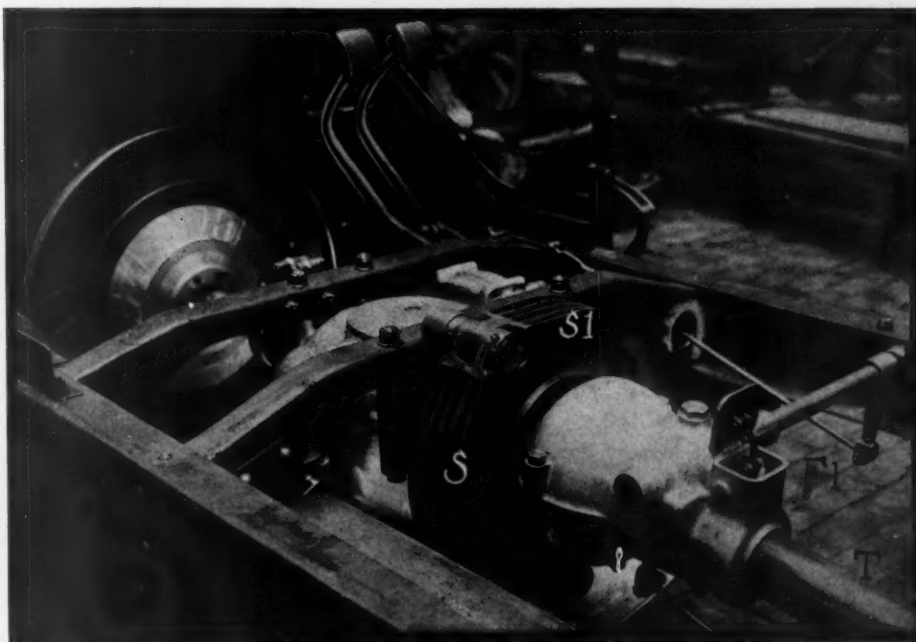


FIG. 4—RENAULT GEARSET WITH NEW TORQUE TUBE AND OTHER FEATURES

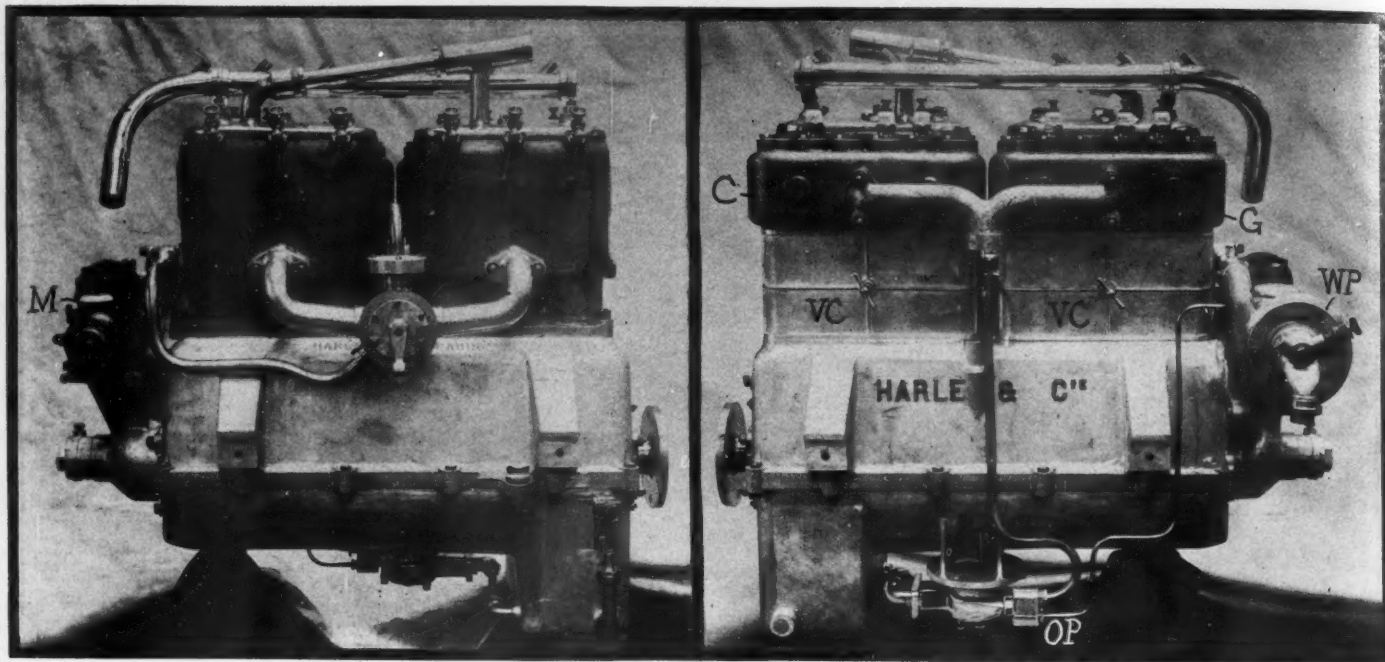


FIG. 5—TWO VIEWS OF SAUTTER-HARLE SIX-CYLINDER MOTOR—NOTE EXTERNAL OIL PUMP

houses have adopted four-speed gearsets in place of three speeds. On the Aries cars a chain-driven geaset has been adopted in place of spur gears. Sautter-Harle has produced a novelty in the form of a patented four-speed gearset with internally meshing teeth. In Fig. 8 A represents the primaryshaft and J the layshaft; D1 and D2, gears, with external teeth only, have a sliding movement on the shaft. E, with internal and external teeth, runs free on its shaft; H, also with internal and external teeth, is fixed. On the layshaft F and J, with external teeth only, are fixed on the shaft; C and B, with internal and external teeth, run free on the shaft, and are constantly in mesh with the pinions D1 and D2. For the direct drive the external teeth of D2 mesh with the internal teeth of H. For third speed the external teeth of D1 mesh with the internal teeth of the loose pinion E, the drive thus being D1-E, F, J, H. For the second speed the internal teeth of C are brought into engagement with the external teeth of F, the combination being D1, C-F, J, H. For the first speed B meshes with J, giving the combination D2, B-J, J, H. In every case it is an internal gear meshing with an internal one, and also the whole of the teeth mesh at once. The changes are made with remarkable ease. Reverse is obtained in the ordinary way by the use of externally meshing spur gears. The system allows of the use of remarkably short shafts.

Look into Two-Cycle Type

The rage for valveless motors in Europe has caused attention to be drawn to the two-cycle type, which previously never has enjoyed any popularity on this side of the Atlantic, and has not been adopted for car work by more than two or three continental firms. Low thermal efficiency and high gasoline consumption in a country

where gasoline rates are already too high, have always been against the simplest type of two-cycle so well known in America. It is significant that the Sautter-Harle company, an engineering firm engaged in the highest class of work, should produce a chassis de luxe for the 1911 season fitted with a two-cycle motor.

The motor is distinctive, however, by being devoid of crankcase compression, and by the use of piston valves V, Fig. 7, which work at only half the engine speed, whereas all other two-cycle motors having valves operating at engine speed. The makers put forth the engine as a valveless type. It is as valveless as is the Knight, the valves here being four small bronze pistons operated by a crankshaft carried in the position usually occupied by the camshaft on the ordinary type of motor.

On the Sautter-Harle the piston has a double diameter, the upper portion—that

within the combustion chamber—measuring $3\frac{1}{2}$ inches, with a piston stroke of 5.1-10 inches. Naturally the cylinder has also a double diameter, the lower portion, acting as a compressor, being of much greater diameter than the upper portion. While an explosion is taking place on the head of the piston A, Fig. 7, the lower portion B is aspirating a charge from the carburetor G, through the ports in the piston valve V, into the lower portion of the cylinder. After expelling the spent gases through the port F into the water-jacketed exhaust manifold I, and receiving a fresh charge through the intake port D, the piston ascends on its compression stroke, the compressor driving the fresh charge into the feeder H, from which the neighboring cylinder is supplied. It will thus be seen that the compressor of one cylinder supplies the neighboring cylinder with gas. While the main piston A is ascending, the piston valve C continues its

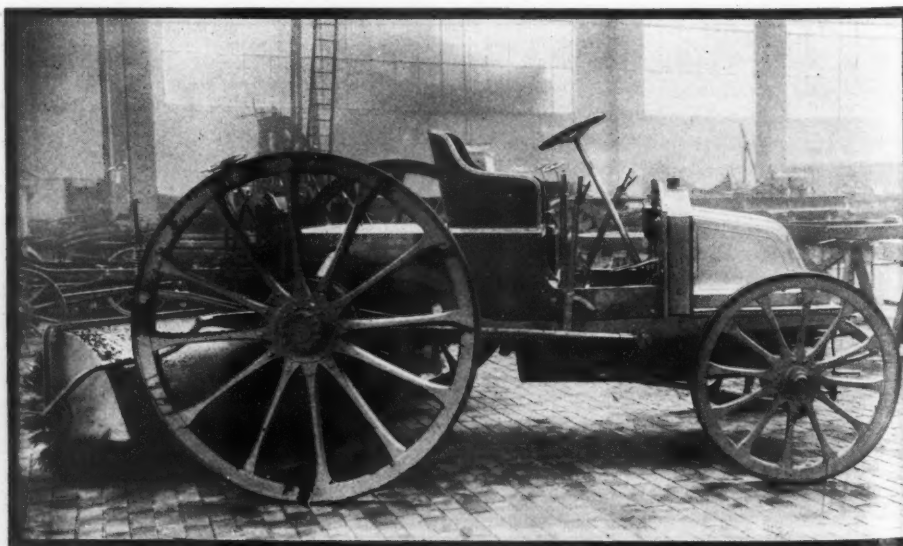


FIG. 6—RENAULT STREET SWEEPER THAT IS USED IN PARIS

downward movement, and it is only when the main piston descends for the second time that the piston valve moves upward, putting the compressor into communication with the carbureter. This feature of the motor, a piston valve working at half engine speed, is the subject of a patent held by the Sautter-Harle Co. The chamber shown on the carbureter side of the motor receives the charge aspired and compressed by the lower portion of the piston and supplies it to the correct neighboring cylinder. The two cylinders forming one pair have their cranks set at 180 degrees, while the two groups are opposed at 90 degrees and balanced by counterweights.

Fuel Consumption Rational

According to the statements made by the engineers, the bench tests of this motor reveal a consumption as favorable as that of the best four-stroke type. The motor develops 40 horsepower on the brake, which is better than is generally obtained with the four-stroke type of equal cylinder area. With four power strokes per revolution there is an entire absence of vibration, the motor is very quick in acceleration, and the absence of poppet valves, springs and tappets makes it absolutely silent.

The four cylinders are mounted on an aluminum crankcase, and the mainshaft carried in three plain bearings. Set across the forward end of the motor is the high-tension magneto, turning at engine speed, with the water circulating pump operated off the same shaft. Lubrication is under pressure by means of a pump worked off the rear extremity of the piston valve shaft. Oil is drawn from the crankchamber base, delivered to the main bearings, carried through the bored shaft to the connecting rod ends, and up the tubular connecting rods to the gudgeon pins. The piston valves are alone lubricated by splash. The shaft of the oil pump also drives an air pump for maintaining pressure on the gasoline tank. The radiator is below the chassis frame, thus giving complete access to the motor on raising the bonnet.

Four-Speed Gearbox

One of the distinctive features of the chassis is the use of a four-speed gearbox with internally meshing teeth for all gears. It is an extension of the principle already adopted in the gearboxes of most cars for the direct drive. The whole of the teeth coming into mesh together, and not merely one or two, it is absolutely impossible to foul the gears whatever change is being made. Though, of course, not advisable for the transmission, it has been found that it is easy to pass directly from first to fourth as from third to fourth. The gearset is of the selective type. A feature of the final drive, which, however, is common to all the other chassis produced by this firm, is that the axle is undivided, the outer tubes carrying the differential and taking the drive to the road wheels.

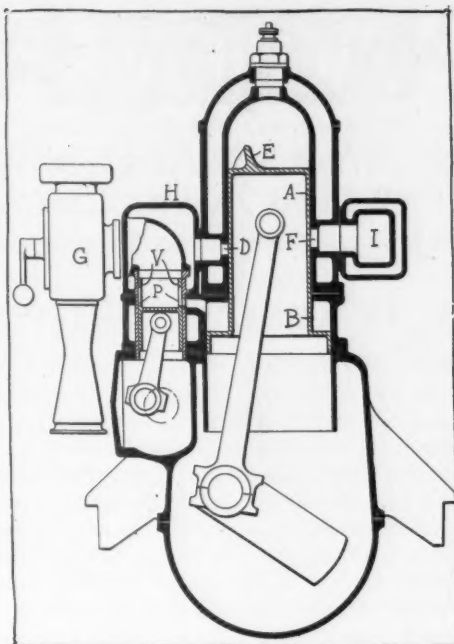


FIG. 7—SAUTTER-HARLE TWO-CYCLE MOTOR

Claims made for this are additional strength by reason of the undivided axle, and lesser weight on account of the differential housing being merely a light oil retaining aluminum casting.

Rotary Sweepers Come In

The horse is having to go from the street sweeping department of the city of Paris. He is too slow for work in crowded cities, and as time is money, he has become too costly. The street sweeping department has had in use for some time a number of rotary sweepers driven by a small four-cylinder motor, and have now taken delivery of a series produced for them by the Renault company. Here the motor is a small two-cylinder, similar to the one employed extensively in Paris for taxicab work. The motor part is entirely on standard lines, the only difference forward being that large diameter metal-shod wheels are employed. At the rear the frame members are strongly upswept, very large diameter wood wheels being employed. Sus-

pension at the rear is secured by means of a transverse inverted semi-elliptic spring. Drive is taken to the rear axle through a three-speed gearbox, the gears being operated by the usual type of side lever, while a separate central lever serves to put into gear the shaft driving the rotary brush.

NEW ROUTE SUGGESTED

Seattle, Wash., Dec. 10—At the last meeting of the governing council of the Pacific Highway Association held November 26 an entirely new route for a part of the Pacific highway was suggested to that body. The suggestion, if carried out, would make the north bank of the Columbia river from Vancouver, Wash., to The Dalles, Ore., and then would cross and follow the Deschutes canyon through to Prineville and on to Lake View, Ore., and cross into California through the northwestern corner of that state. It is argued by those interested in this route that it would pass through a section of the country in which road building would be much cheaper and fewer grades would be encountered than by way of the Willamette valley and the Siskiyou mountains through Oregon and northern California.

No action whatever was taken by the officials of the association on this route. While it is true that the new course suggested has some advantages, the road that is usually taken from Portland south through western Oregon will serve a great many more people along the way and will pass through a far more thickly settled territory.

Assurances have recently been made to the officials of the Pacific Highway Association that the Sacramento Automobile Club will immediately affiliate with the Highway association, and that the Thurston County Good Roads Association of Washington will also actively support this work. The motorists of Aberdeen, Wash., are ready to organize a club and lend active aid to the promotion of the Pacific highway project.

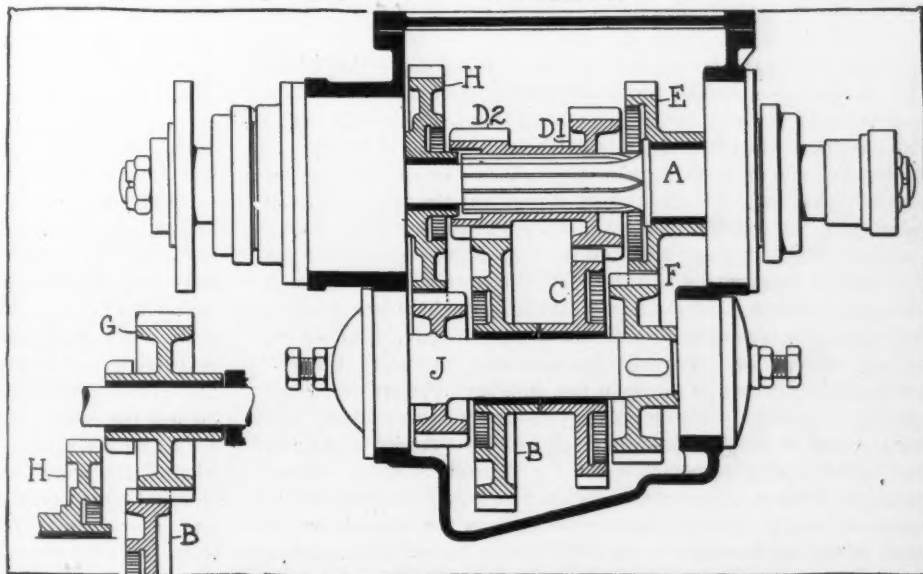
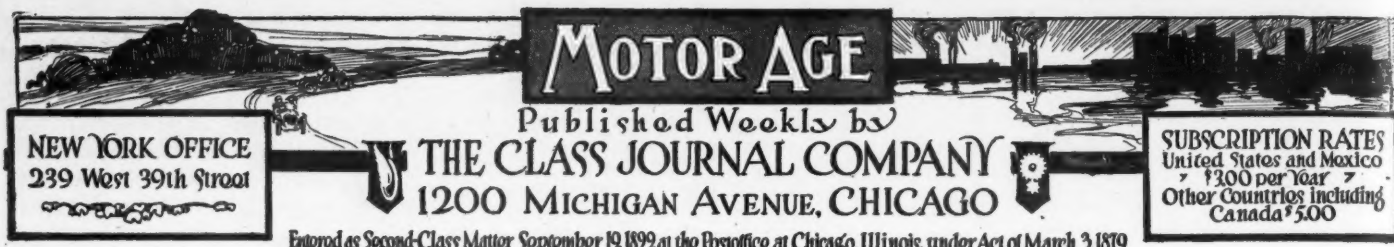


FIG. 8—SAUTTER-HARLE INTERNAL-GEAR GEARSET



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MOTOR AGE

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The French Industry Shows Progress

FRANCE, after doing without an annual show a year ago because its makers thought they could sell cars without shows, has at last come down to hard bottom facts and has held what might be called a business show, which will close in a few days. Now the question is being asked throughout Europe, "Can France come back?" During the interim when the French were resting on their oars, so far as shows were concerned, other European countries were doubly alert, and even many of the French makers joined in the efforts of England and Germany in the show business. All this time many others of the big French makers watched silently the progress of events. What the exact results of those 2 years without a show brought about will be known when the reports of the present salon are given out, but it is a certainty that the original glamor of the earlier shows has been greatly diminished because already the majority of Europe is familiar with the new models, having seen them in London, and so the keen interest that ordinarily followed the earlier Paris shows has been largely reduced.

BUT France deserves credit for at least being businesslike in the situation. Instead of the lavish expenditure of individual firms in trying to outdo one another in beautifying their exhibit spaces, there has been this year, for the first time, a uniform system of decoration for all exhibitors. This in itself is a healthy indication that France is at least determined to come back if it can. Many of the manufacturers tired of the enormous expenditures they had to make for the different shows, and which was directly responsible for the curtailment this year. But the French manufacturers have gone still further and this year they will participate in the profits accruing from the show. In past seasons all of the profits have gone to clubs that had their own interests more at stake rather than the industry. These changes are healthy business conditions. They show that the era of useless expenditure is over, and that the business is a staple business. It would have been better for France had it realized this 4 or 5 years ago; and it is well for America that it has realized it and realized it over a year ago. The sooner all other countries vitally interested in the motor industry realize it, the better.

THE preliminary forecast of the Paris salon shows that France is making important steps, but whether such can be considered permanent progress or not remains to be seen. Frequently changes made one year are dropped the following season, and it is only after the lapse of two or perhaps three seasons have past and changes have been recognized as permanent advancement that the real trend of the industry can be measured. As it is France is making many changes and not a few of them are imitations of constructions that have been pushed for a season or two by other countries, although on the other hand France is setting a pace for the rest of the world in some respects. The monobloc cylinder casting for two, four or six-cylinder motors has apparently come to stay, so far as France is concerned. The French workman has developed the art of foundry practice to perhaps a higher degree than the workmen of any other country, and it is this development of foundry practice into an art that is so largely responsible for the present landslide towards monobloc castings. One other factor has helped to promote the monobloc casting and that is the great demand for a small car with ample power for mountain work. The big car has not that following it had 2 years ago. What the European masses want is a car with

as small a motor as it can get along with and as much passenger capacity as possible. With this object in view the makers have tried to reduce the length of the bonnet from the radiator to the dash. To do this the monobloc casting has been introduced and so have ball bearings to carry the crankshaft. The net result of these two features of design is that six-cylinder motors with cylinder diameters under 3 inches are now housed in less space than four-cylinder types were a few years ago. This has a direct result on the life of the car in general because manufacturers have unhesitatingly stated that the six-cylinder motor is easier on all parts of the car because of its more constant torque than is the four-cylinder type. It is of interest to note that practically all French concerns have brought out six-cylinder designs, although scarcely a company manufactures the six exclusively and there is not a case on record where a four-cylinder model has been eliminated in order to make room for a six.

THE French designer has at last placed his stamp of approval on thermo-syphon water circulation. For the past 5 years thermo-syphon cooling has been heard of in a more or less general way. At the start low-powered motors used it; a little later on it was employed on medium-priced machines; and now it is becoming general on the highest-powered touring cars of four and six-cylinder construction, in fact, it is being generally employed without the use of a fan in the rear of the radiator. This may be due to the fact that the fan occupies space and the demand for a short bonnet has had a direct bearing on the situation. The thermo-syphon system generally calls for larger waterjackets and more radiator capacity. It has been argued by many designers that the thermo-syphon system is heavier than the water pump. It is not known exactly how these figures compare in French manufacture, but the Frenchman in all his designs seems to be working along the line of the elimination of parts that may give trouble sooner or later.

ALTHOUGH eliminating the pump from the water system, the French manufacturers have taken a landslide to the pump for the lubrication of the motor. It is certain from present tendencies that the splash system of lubrication is on the wane. Makers have found out that with the splash there is generally too much oil at low speeds and not enough at continued high speeds; they have also conceded that it is not the best thing for the lubricant to keep the entire body of it constantly churned up. Instead of the entire big end of the connecting rod dipping into a large volume of oil, the tendency is to put a small scoop on the end of the connecting rod and letting this dip into a very small volume of oil in a trough, the complete capacity of the trough being less than a cupful. In this way the total volume of oil is not subject to one-tenth the churning it receives in the ordinary splash system. But the makers are going further and are following the American practice of drilling the connecting rod so that oil is fed by pressure direct to the piston pin bearings. It is satisfactory to know that some of the oldest and highest respected French car manufacturers, who have employed the simple splash system up to the present year, have for next season adopted the more economical circulating system employing a small trough beneath each connecting rod. It is now general among the leading makers to feed oil direct to the crankshaft bearings; in brief, the word pressure now seems to describe best foreign practice in the matter of motor lubrication.

FRENCH WILL RUN A STOCK CAR ROAD RACE

PARIS, Dec. 3—France will hold what may be considered a stock car race during the month of June, 1911. The models taking part will not conform entirely to those delivered to the public, but they will be as near an approach to the standard article as the Frenchmen care to go in a pure speed event. The regulations admit any car having a cylinder capacity of 3 liters and weighing complete not less than 1,763 pounds without oil, water or gasoline. Cylinder volume has been adopted in order to admit the most popular type of French car at present built, with a four-cylinder motor measuring from 3 to 3.3 inches bore. As nine-tenths of the factories produce such a model, it is expected that entries will be large, for the racing cars will be standard in their main features. It is stipulated that the stroke shall not be greater than twice the bore, nor less than the bore. Thus, for a four-cylinder motor the extreme dimensions would be 98.5 by 98.5 millimeters and 78.1 by 156.2 millimeters. For a six-cylinder they are 86 by 86 and 68.2 by 136.4 bore and stroke. It is believed that despite the classification under cylinder area the long-stroke motor will predominate.

The cars will race for a distance of about 500 miles, with two-seated body, mudguards and running boards. The minimum width of the body is fixed at 41 inches, the front mudguard must be level with the front of the wheel, and must overhang it at the rear. Four cars per firm are allowed to take part in the race, the award of which will be on pure speed, with a second award on regularity, taking account of the three first cars of each team only; the fourth car is ignored. Both seats must be occupied, either man can drive, demountable wheels or rims are allowed, and all work must be done by the driver and his mechanic.

It is expected that the race will be held on the Boulogne course, the scene of this year's voiturette test. It is conveniently situated for English, German and Belgian firms and is only 150 miles from Paris. Although the conditions have just been announced, four entries have been received. The race meets with the approval of manufacturers and doubtless will draw entries from France, England, Spain, Belgium, Italy and Germany.

This light-car race makes the fourth big road race to be held in France next year, the others being the voiturette race, the grand prix de France for limited-powered cars, and a race held at the same time for cars of unlimited power.

HUPMOBILE REACHES COAST

Los Angeles, Cal., Dec. 8—The world-touring Hupmobile party arrived in Los Angeles this afternoon, having made its trip from Detroit here in 36 days. Arrangements have been made to sail Tuesday from San Francisco for Honolulu.

Europe Shows Every Indication of Giving the Sport Strong Support in Summer of 1911

Both car and party came through the strenuous trip from Detroit in splendid style. The start was made from Detroit, November 4, and frequent stops of a day or more were made in the larger centers of the middle west. After leaving Denver the car and crew had a continuous battle with the wilds, gales across the bleak Wyoming plains, blowing fine alkali dust and sand before them, making progress almost impossible. Some of the slopes the little car had to climb were so steep that the gasoline could not flow to the carbureter from the tank at the rear of the car. At such times the block and tackle had to be called into use. One memorable day the conditions were such that the party spent 5 weary hours in going 4 miles.

WESCOTT DISQUALIFIED

New York, Dec. 12—S. M. Butler, chairman of the contest board of the A. A. A., has just announced the disqualification of the Westcott car, No. 26, which contested for the Coca Cola trophy at the Atlanta speedway meet, November 3, and finished second. The car completed with a larger sized magneto than was listed as stock on the registration blanks and also a larger sized carbureter. The technical committee drew attention to these irregularities before the start of the race, but the Westcott company assured the committee that the requisite number of cars was being fitted with these and that the correct registration blanks were in the mails from New York to Atlanta. The Westcott company agreed to deposit a \$4,000 bond as surety in the matter. Chairman Butler's announcement says that the Westcott company has failed to put up the bond and the car has been disqualified and the company notified to return the \$250 prize money. This disqualification puts Dawson in the Marmon second, Gelnaw in the Falcarr being the winner.

TO BUILD ROAD IN 2 DAYS

Nashville, Tenn., Dec. 10—Governor-elect Benjamin W. Hooper, who will take his seat as chief executive of Tennessee in January, has inaugurated a project to build a highway across the state the long way, from the extreme border in the mountains on the east to the Mississippi on the west, touching en route many of the leading cities and towns of the state and passing through the capital city. The road will be about 600 miles in length. The plan is to build the highway in 2 days, the work being done by thousands of volunteers and the material, wagons, tools and other things being donated. It is proposed, with a subscription raised in advance, to put in the bridges and culverts

and macadamized in the 2 days next August set aside for the project.

The idea has proved very popular and Capt. Hooper, even before an organization has been perfected, has received hundreds of letters offering material, wagons, teams and men.

To carry out the project the Tennessee highway commission has been organized in connection with the Nashville board of trade and this organization is now doing the necessary preliminary work for a systematic campaign. There are of course many miles of road over the route already built and it will be only necessary to fill in the gaps and put the old roads in good condition. Information as to just what will have to be done is now being gathered by this organization.

From information now at hand it appears that there are only three counties east of Nashville where entirely new roadway will have to be built, but west of Nashville, in the bottom lands of the Tennessee river and in the lowlands of the Mississippi river, there will have to be a great deal of new road built.

In some counties there will have to be some heavy grading done, as the idea is to have not over 6 per cent grade anywhere and to try to keep it under 3 per cent. It is proposed to have certain counties furnish such heavy machinery as is needed, the machinery to remain in those counties to build lateral roads later. It also is probable that manufacturers of road-making machinery will give the use of some machines free, as the state highway will give a great impetus to the road building idea all over the state.

The railroads, through high officials, have already signified their willingness to lend a helping hand, and men and machinery will be transported from the thickly settled sections to the sparsely settled communities.

SPEEDWAY OFFICERS ELECTED

Atlanta, Ga., Dec. 10—The Atlanta Automobile Association has held its election of officers. The stockholders met first and elected directors and the directors then held an election and named the following officers: F. J. Cooledge, president; John J. Woodside, vice-president; Asa G. Candler, Jr., secretary; W. D. Owens, treasurer. It is uncertain what will be done with the speedway. Owing to the fact that the A. A. A. has refused to give the local track the dates it has wanted and because of the poor patronage on the unseasonable dates which were granted the speedway racing game in Atlanta looks like a bad proposition. In all Atlanta has run four meets. The opening of the track a year ago last fall was a most auspicious one. Three meets were held this year, one of which was for local talent only. The other two attracted several of the stars and drew well.

Everyone Optimistic in Detroit

DETROIT, MICH., Dec. 12—A decidedly optimistic sentiment prevails in local motor car circles, and it will become more pronounced as the show season draws nearer. Interest in the annual New York show never was more keen. It is the main topic of conversation in the motor clubs and among the manufacturers generally. That the hub of the industry will have a proper representation both in the exhibits and among the visiting hosts is certain.

At least two large parties will go to New York from here, the first leaving December 31 and the second on January 4. The Wolverine Automobile Club, which, in the short space of 5 months, has developed into a flourishing and influential organization, has made arrangements to have special cars attached to the regular Michigan Central train leaving here at 3:45 p. m. on those dates, and many of the club members are planning to take advantage of the accommodations.

Meanwhile arrangements for Detroit's own show are being carried out under the direction of Manager Walter Wilmot, who has been given free rein in the matter of decorations. The available space will not begin to take care of the applications, a fact that has given rise to some agitation for two shows a year instead of one, but in spite of the handicap Mr. Wilmot declares that the exhibit will be outrivaled only by the New York show. The drawing for space takes place Thursday night.

Wolverine Club's Meeting

The Wolverine Automobile Club held its first annual meeting in its cozy new quarters in the Griswold last Tuesday night. Absolute harmony prevailed at the election, the slate that had been previously nominated going through without a hint of opposition. The officers chosen are: President, H. J. Porter; first vice-president, C. F. Gilmour; second vice-president, H. C. Mills; secretary, F. H. Trego; treasurer, E. W. McGookin. The board of directors is composed of the officers and the following: L. H. Collins, W. G. Bryant, Charles F. Grant, William F. V. Neumann; auditing committee, George E. Edmunds, W. P. Culver and John A. Boyle. The first five named were all re-elected with the exception of Mr. Gilmour, who succeeds Mr. Collins as first vice-president. It was generally agreed that Mr. Porter's administration had been an unqualified success, and there was no disposition to disturb the pleasant relations existing.

The report of Secretary Trego showed a total membership of 908. The 1,000-mark will be passed before the advent of the new year. The applications now in are nearly sufficient to make this possible. A special membership committee of 100, including one representative from every motor car and parts factory in the city, has been appointed.

An event of unusual interest to the club members is scheduled for Tuesday evening,

when, on the occasion of the regular monthly meeting, Ralph Lucas, of London, Eng., inventor of the Lucas valveless engine and an engineer of note, will lecture on "Simplicity of Motor Car Engine Design, Two-Cycle Engines and Balancing Motor Car Engines." Mr. Lucas is consulting engineer of the Valveless Motor Car Co., of London, and a member of the Institute of Mechanical Engineers and the Institute of Automobile Engineers. He came to this country 2 weeks ago at the request of J. Bodiman, who has an option on the American rights for the Lucas valveless motor and, it is said, plans to organize a company for the purpose of manufacturing cars of this type in the United States. Detroit is regarded as a possible location for the new enterprise.

Incorporation of the Detroit Motor Cycle Co., which will manufacture the Detroit motor cycle, has just been announced. The incorporators are James J. Brady, formerly vice-president and factory manager of the Chalmers Motor Co.; James Flett, superintendent of the Timken-Detroit Axle Co.; William J. Nagel, former deputy city controller, and Judge William F. Connolly. The same interests constitute the Acme Machine Tool Co., located on Wayne street, which was organized only a few months ago. The new concern is prepared to begin manufacturing operations at once, utilizing the Acme plant, and the machines will be placed on the market immediately following the New York show.

The old plant of the Hudson Motor Car Co., at Mack avenue and the Belt line, recently vacated by the Hudson company, has been leased by the American Auto Trimming Co. and will become its main factory after January 1. The main building was erected about 5 years ago and was used originally by the Aerocar Co. The new tenants will pay a rental of \$10,000 per year, it is understood.

Gray Company Moving

The Gray Motor Co., absorbed by the United States Motor Co. last summer, is moving from its factory at Leib and Larned streets to an immense new plant on the United States Motor Co. tract out Oakland avenue. This is one of the group of which the Alden Sampson commercial car factory, the Brush runabout works and the projected new plant of the Briscoe Mfg. Co. are integral parts. The Gray Motor Co. in 1906 began operations in one corner of a small factory building on Guoin street. Its facilities have been increased many times since then. Its new home is 1,000 feet long by 150 feet wide. Its product consists of marine, stationary and irrigating engines of from 3 to 36 horsepower. The new administration building being erected by the United States Motor Co. at Woodward and Charlotte avenues, where all the local officers of the company will have their headquarters, will be ready for occupancy early in 1911.

The Fisher Closed Body Co. has taken out a permit for a three-story brick factory building on Oakland avenue, to cost \$50,000. A one-story building of brick and reinforced concrete construction is being built by the Bower Roller Bearing Co. on Hart street at a cost of \$15,000.

The Excelsior Supply Co., of Detroit, distributor for the Shelby seamless mechanical steel tubing in Detroit, has been taken over by the Cleveland Tool and Supply Co., of Cleveland, O., which concern will maintain the former's warehouse on East Atwater street and will carry a greatly increased stock as distributor for the National Tube Co., this city being the base for eastern Michigan. There will be no change in the local management for the present.

More Money for Metzger

The Metzger Motor Car Co. has placed on record a trust mortgage for \$400,000, running to the Union Trust Co., of Detroit, to secure an issue of bonds in that sum, which has just been underwritten by outside capital. The mortgage covers all the real estate and personal property of the company in this city and environs. W. E. Metzger explains that the money was needed for additional capital. It was very gratifying, he says, to be able to raise the funds so readily and on such satisfactory terms as were secured under the conditions now prevailing in the money market.

On the petition of the directors of the Owosso Motor Co., its superintendent, J. P. Waters, of Detroit, has been appointed temporary receiver of the concern by Judge Miner, of the circuit court located at Owosso. A hearing has been set for March 7. In the meantime, the plant in Owosso will continue turning out cars of the light delivery truck type. The present action is taken with a view to reorganizing on a firmer basis. It is announced that C. V. Richardson, of Detroit, designer of the truck, is no longer connected with the company in an official capacity. General Manager W. E. Hall states that the car will be improved by the installation of a larger engine. Improvements in the transmission also are contemplated.

Creditors of the Barnes Motor Car Co. have agreed on the Security Trust Co. as trustee in bankruptcy. The plant owned by the company in Chatham, Ont., will be appraised preliminary to its being offered for sale. There is some question about the title, however, because the company failed to take out the inter-provincial license. The Anhut Motor Car Co., predecessor of the Barnes, gave \$50,000 for the plant, in stock. Mr. O'Keefe, of Chatham, testified at a hearing before Referee in Bankruptcy Joslyn that the property probably would not sell for \$10,000 today.

W. G. Wagenhals, who came here from St. Louis last summer, has completed his first three-wheeled car for commercial use, outside of the sample car which attracted so much attention a few months ago. The

car has been built for a tailoring concern. It is equipped with a 20-horsepower motor, suspended on a sub-frame, which does away with the jar. The power is transmitted by a large planetary transmission through a direct chain drive to the rear wheel. There is no differential. Mr. Wagenhals has established a factory on Commonwealth avenue.

The Maxwell model Q, which left Detroit a week ago on a 1,200-mile run about the state, arrived in Harbor Beach at 5 o'clock Saturday night, without a seal broken. Up to that time Driver A. V. Davis had not experienced even any tire trouble, in spite of the fact that he encountered some of the worst roads in the state and much snow. The car is expected to reach home not later than Wednesday morning. The car will be exhibited in the local show, after which Robert K. Davis, manager of the United Motor Detroit Co., plans to take a little run himself, with Chicago as the objective point.

True Test of Car

"My object in sending the car out on such a run at this time of the year was to dispel the idea that prevails in some of the rural sections that a motor car is of no use to the farmer in the winter time," said Mr. Davis. "Dealers out in the state were writing in to me, saying that there was no use in trying to sell cars to the farmers in the winter, as the roads were too bad. I just wanted to show them where they were wrong, and I think I have."

VELIE DECLINES TO SETTLE SUIT

Moline, Ill., Dec. 12—Efforts to settle the suit for \$500,000 damages brought by the Velie Motor Vehicle Co. against alleged individual members of the Association of Licensed Automobile Manufacturers have not been successful, and the Moline company will continue to fight the case in the Wisconsin courts. Manager Reeves of the licensed association, which in the plea of the Velie company is charged with being a combination in restraint of trade, has been in Moline in order to bring about a settlement of the suit, it is said, but that his efforts were in vain is evident from the statement of Secretary L. M. Fuller of the local company, who says:

"The contention of our company is the same as when the suit was first brought. We are standing pat and no agreement as to the settlement of the case has been made."

This is the second visit that Manager Reeves has paid to Moline during the past month, and is supposed to indicate some intention on the part of the parties to the suit to settle the case out of court. The only other recent developments are that the defendants in the suit, which at first numbered fifty-six, have been reduced to three, the Locomobile Co. of America, the Pierce-Arrow Motor Co. and the Premier Motor Mfg. Co.

Highway Improvement Plans in Iowa

CLINTON, IOWA, Dec. 8—The closing of the 1910 touring season in Iowa marks one of the most successful good roads movements in the history of road making in the United States. Three main trans-Iowa routes have been laid out, two of which have been thoroughly established, giving tourists routes across the state west from Clinton and Davenport, while the third, which reaches west from Dubuque, is still in an unorganized condition. However, intense rivalry exists among these organizations as to the best route, with the result that in Iowa there is today a movement for good roads which extends in every direction.

The officials of the White Line post road from Clinton to Council Bluffs, the first of the roads organized, are looking forward to their annual meeting and point with pride to the work of their organization during the past season. With a thoroughly organized association, with working vice-presidents in each county and road chairmen in each city, work has been done which, according to the statement being prepared by the secretary of the association for the annual meeting, shows a most satisfactory condition and bears out the original ideas of the association which since its inception has been "stake our claims and then improve them."

The report will show that 500 signs have now been placed over 380 miles of the route and the turns, making practically one sign per mile, and that the white line on the telephone poles has been marked over the entire route, so that tourists entering the state of Iowa by day or night can abandon their route books and follow the signs and lines. It was by means of these lines and the uniform sign system that the record-breaking transcontinental cars were enabled to make their fast dashes across the state this summer and fall.

The association has been co-operating with the commercial clubs of Dennison, Boone, Cedar Rapids, Marshalltown, Carroll and other cities, with a view of securing co-operation for the maintenance of the route and side routes from these cities as well. These meetings have been held with large numbers of farmers and state road officials as well, and at a recent meeting in Dewitt over 1,000 farmers and others were in attendance. It was announced at this meeting that the county road supervisors have power to enter into contracts with farmers and others for the dragging of the roads, for which work 50 cents per mile will be allowed by the state, provided King road drags are used.

An interesting item in the report is the fact that for the past few months the officials have been receiving requests from eastern road organizations for information as to the work and aims of the organization, and a well deserved compliment to

western road makers was extended to W. F. Coan, of Clinton, vice-president of the association and member of the executive committee, when, while in Hartford, Conn., recently, he was asked to address the Hartford Automobile Club.

The association's plans for next season include not only the constant improvement of the road, but a system for improving the comforts of the tourists, of whom more than 1,500 motored over the route this past season. This is to be accomplished by co-operating with the hotels, en route to add certain comforts and facilities for the motorists. The association will continue to issue weekly bulletins, copies of which will be displayed in the hotels. It also is planned to take up the road work with the organization in Illinois and Nebraska for the establishing of a national highway.

PARRY COMPANY'S AFFAIRS

Indianapolis, Ind., Dec. 12—Creditors of the Parry Automobile Co., recently placed in the hands of the Union Trust Co., receiver, held a meeting last Friday. No definite recommendations were agreed upon, although several plans were discussed. The following have been appointed a permanent creditors' committee: E. S. Fretz, Pottstown, Pa.; F. C. Dorn, Cleveland; C. W. Blackman and F. W. Spacke, Indianapolis; G. Jahn, New York; F. M. Boyer, Muncie, and C. O. Roemler, the last named being an attorney.

The report of the temporary creditors' committee recommended that creditors consider the following propositions: First, an offer to sell their accounts to the company at 25 per cent of par value, giving the company a reasonable time in which to raise the funds necessary to accept; second, that an effort be made to have advanced by the receiver sufficient money to operate the plant until the stock on hand is made up in finished cars and sold; third, that the receiver close out the business as speedily and economically as possible; fourth, the selection of a permanent creditors' committee to coöperate with the receiver.

After a full discussion it was the sense of the meeting that a complete inventory and appraisal was first necessary and that a permanent creditors' committee should be appointed with full power to act. The committee above named therefore was appointed.

The statement which was presented at this meeting showed that the total indebtedness is \$221,149.54 to 362 merchandise creditors and \$15,595.16 to seventy-six agents for deposits, a total indebtedness of \$236,745.19. The temporary committee reports that the Parry company's filed resources show a total of \$380,217.69, but that in the committee's estimation the value of the resources is but \$143,315. The liabilities of the concern are listed at \$482,923.09.

Lengthy Show Circuit This Winter

NEW YORK, Dec. 12—Announcement is made that the annual banquet of the Association of Licensed Automobile Manufacturers will be held at the Astor on Thursday, January 12, 1911, which is during the first week of the association's show in Madison Square garden. It is planned at this banquet to recognize some of the very old timers in the motor car trade, including those pioneers who struggled in the early days to obtain recognition for their machines and for the infant industry.

The speechmaking part of the affair will be limited to three or four prominent speakers, and a number of side innovations will be introduced to enliven the gathering. The same banquet committee that handled the successful affair of last April will again be in charge, the names including H. B. Joy, chairman; Benjamin Briscoe, A. L. Pope, R. E. Olds and H. A. Lozier.

During the 2 weeks of the Madison Square garden show there will be meetings of almost every organization of any consequence in the motor car industry. In addition to the A. L. A. M. banquet there are several other meetings and events already scheduled, as follows:

January 10—Meeting of executive committee of the American Automobile Association. The contest, good roads, legislative and touring boards will hold open sessions during the 2 weeks period of the show.

January 11—Meeting of executive committee of the Association of Licensed Automobile Manufacturers at official headquarters, 7 East Forty-second street, New York.

January 11—Meeting of executive committee of National Association of Automobile Manufacturers.

January 11-12—Annual meeting of Society of Automobile Engineers at the Automobile Club of America. A dinner will be held during the session.

January 12—Meeting of board of managers of the Association of Licensed Automobile Manufacturers, at executive offices.

January 13—Annual meeting of the Motor and Accessory Manufacturers' Association. Annual dinner at Waldorf at night.

ST. LOUIS FOLLOWS CHICAGO

St. Louis, Mo., Dec. 12—It is announced that about 90 per cent of the space available in the Coliseum for the fifth annual show, to be held February 13-18, has been taken. It is evident that nearly 150 cars will be shown, many of which will be shipped to St. Louis from the national show at Chicago, which closes the Saturday preceding the Coliseum exhibit. It is planned to have several special nights, when invitations will be sent out. There will be society night, business men's night, municipal night and military night. In a general way the scheme of decoration will closely follow that of Madison Square garden show. The ceiling and sides of the Coliseum will be draped with wild smilax, to be shipped to St. Louis from Georgia. At the main entrance will be a bower of flowers and plants topped off by roses. Just inside will be a large picturesque fountain of running water, and around this flowers will be banked. White pillars, capped with illuminated globes, will be placed at the division points of exhibition spaces and will form a double line down

the two main aisles. An immense dark green carpet will cover the entire floor. It is planned to make the affair take the place of the horse show as a social event, and a number of prominent women have consented to act as patronesses.

PALACE'S MUSICAL PROGRAM

New York, Dec. 12—The management of the Grand Central palace show, December 31 to January 7, seeks to make the affair still more worthy and memorable. In place of the usual ordinary musical program, a concert, with celebrated instrumental and vocal soloists, will be furnished afternoon and evening. Thirty-five selected musicians, of whom twenty will play reed instruments to soften the tone and volume of the melodies, have been engaged under the leadership of W. E. Baufuss, the Chicago conductor. The soloists are musicians and singers of note. Miss Jacobsen and Mr. Baxter, famous as vocalists with prominent band organizations, will furnish the singing numbers.

In the motor car section there will be seen some new ideas. Prominent among these are two new three-wheel runabouts, for which the makers claim great economy of operation. They are entirely different in conception and design, one having the single wheel in the rear and the other utilizing it at the forward end of the car.

MILWAUKEE READY TO DRAW

Milwaukee, Wis., Dec. 13—The first drawing for space for the first annual show of the Milwaukee Automobile Dealers' Association will be held in the Auditorium Thursday. Applications for the first drawing must be in the hands of the show committee or Manager Bart J. Ruddle on Wednesday. The show will be the third to be held in Milwaukee, the Milwaukee Automobile Club having given two, in 1909 and 1910. This year the dealers' association undertook the management with the co-operation of the club. The semi-annual meeting of the Wisconsin State Automobile Association will be held at the Auditorium during the show, which opens January 16 and closes January 21.

CLEVELAND'S TWO SHOWS

Cleveland, O., Dec. 12—Arrangements for Cleveland's two shows are progressing satisfactorily. The first show, held under the auspices of the Cleveland Automobile Show Co., will be given at Central armory the week of February 13. Frank Philips, Harry Moore, H. M. Adams and C. M. Brockway is the committee in charge. George Collister has been appointed manager and has arranged for the opening to take place Saturday night, February 18. Allotment for space will be made January 3. The manufacturers' and dealers' show

The Show Circuit

December 3-18—Paris salon.
December 12-31—Two weeks' show of Los Angeles Motor Car Dealers' Association, Los Angeles, Cal.
December 31-January 7—Grand Central Palace show, New York.
January 2-7—Importers' show, Hotel Astor, New York.
January 7-14—First week of A. L. A. M. show in Madison Square garden, New York.
January 14-25—Show in Brussels, Belgium.
January 14-28—Show of Philadelphia Automobile Dealers' Association, Philadelphia, Pa.
January 16-21—Second week of A. L. A. M. show in Madison Square garden, New York.
January 16-21—Show in Wayne pavilion, Detroit.
January 16-21—Show at Milwaukee, Wis.
January 25-28—Show in Auditorium, St. Paul, Minn.
January 28-February 4—First week of national show in Coliseum, Chicago.
February 5-11—Show at Buffalo, N. Y.
February 6-11—Second week of national show in Coliseum, Chicago.
February 13-18—Show at Winnipeg, Canada.
February 13-18—Show of Kansas City Motor Car Trade Association.
February 13-18—Show at St. Louis, Mo.
February 13-18—Show in Convention hall, Washington, D. C.
February 14-19—Show at Dayton, O.
February 15-18—Show at Grand Rapids, Mich.
February 18-25—Show at Minneapolis, Minn.
February 18-25—Show at Binghamton, N. Y.

will open Saturday night, March 11, at Central armory. A committee composed of W. H. Barger, Ray Colwell, Harry G. Smith and H. J. Twelvetree has been appointed and 196 applications for space have already been received. The balcony and main floors will be used for motor cars and the banquet hall for accessories. The committees of both shows are planning elaborate decorations and in the number of cars and the diversity of accessories both shows will be the largest that the city has seen.

BALTIMORE PICKS DATES

Baltimore, Md., Dec. 10—The Monumental City's next show will be held the week of February 20 and at present the indications are that it will be run under the joint auspices of the Automobile Club of Maryland and the dealers' association. These facts were made known at a meeting of dealers this week, representing about twenty motor car firms, or half as many as now are located in Baltimore. This meeting was called for the purpose of reorganizing a dealers' association, the former plans in this direction having fallen through. A committee was appointed to formulate a temporary working basis and these plans will be acted upon at another meeting next week. It was during the first meeting that Dr. H. M. Rowe, president of the Automobile Club of Maryland and president of the White Automobile Co., stated that the show would be held on the date mentioned at the Fifth Regiment armory, which is a spacious building.



For This Winter

February 18-25—Show at Brooklyn, N. Y.
 February 18-25—Show at Newark, N. J.
 February 20-25—Show at Omaha, Neb.
 February 20-25—Show at Cincinnati, O.
 February 20-25—Show at Baltimore, Md.
 February 24-27—Show at New Orleans, La.
 February 25-March 4—Show at Toronto, Canada.
 February 27-March 4—Show of Kansas City Automobile Dealers' Association, Kansas City, Mo.
 February 27-March 4—Show at Sioux City, Ia.
 March 4-11—Show at Boston, Mass.
 March 6-11—Show at Des Moines, Ia.
 March 13-18—Show at Cedar Rapids, Ia.
 March 13-18 Show of Cleveland Automobile Dealers' and Makers' Association, Cleveland, O.
 March 14-18—Show at Syracuse, N. Y.
 March 14-18—Show in Auditorium, Denver, Colo.
 March 15-18—Show at Louisville, Ky.
 March 18-25—Show in Pittsburg, Pa.
 March 25-April 1—Show of Pittsburg Automobile Dealers' Association.
 March 27-31—Show of Cleveland Automobile Show Co., Cleveland, O.
 Pittsburg, Pa.
 April 1-8—Show at Montreal, Quebec.
 April 4-8—Commercial Car Automobile Dealers' Association show of Pittsburg, Pa.

After last year's show many of the dealers took exception to the club running the show. They objected to the prices charged for floor space and also felt that they themselves should reap the profits derived from the show. Dr. Rowe stated that this year the club would be willing to meet the members of the Baltimore Automobile Dealers' Association, as the new organization is styled. It seems that the dealers' association cannot lease the Fifth Regiment armory itself, the most logical place for holding the show, as it is incorporated and there is a stipulation that the armory can only be leased three times a year to an association.

At the dealers' meeting there was considerable discussion about admitting unlicensed dealers, but those against allowing these dealers to become members were overruled. According to the plan outlined by W. P. Berrian, of Philadelphia, who is assisting in forming the local association, the organization will be a corporation without stock, the members paying an initiation fee and annual dues thereafter. Dealers in accessories and airships will also be admitted to membership.

LONG SHOW AT PITTSBURG

Pittsburg, Pa., Dec. 12—The fifth annual Pittsburg show, to be held in Duquesne garden, will be open 2 weeks and 1 day, beginning March 25, instead of the usual 1 week. Alterations will be authorized which will provide more show space than last year. The regular monthly drawing for space was held last week, and seventeen

Preparing For Many Expositions

dealers signed contracts. The independent show, which will be held in the Exposition building, is being rounded up in good shape under the management of a hard working committee, which has established offices in the Union Bank building. Both shows will have in connection exhibits of motor trucks. The regular show, having plans arranged for this feature, is entirely independent from the pleasure vehicle exhibit.

DAYTON IN LINE

Dayton, O., Dec. 12—At a recent meeting of the board of directors of the Dayton Automobile Club it was decided that the annual show to be given under its auspices in this city should be held the last week in February. Memorial hall has been secured for the occasion and plans are being laid for one of the biggest shows ever held by the organization.

WICHITA SHOW A GOOD ONE

Wichita, Kan., Dec. 10—The show which opened here Monday night was an unqualified success, although the opening night was marked by a heavy storm, which, however, had little effect upon the attendance. The display of cars was a comprehensive one, including nearly every make that is represented in this town. The Lexington, Cadillac, Halladay, Westcott, Ford, Reo, Chalmers, Detroit electric, Waverley electric, Cole and Johnson were among those shown. In addition there were several displays made by supply houses.

AGAIN A GRAND RAPIDS SHOW

Grand Rapids, Mich., Dec. 12—The second annual show will be held here next February under the auspices of the Grand Rapids Herald. Local dealers are looking for a larger and better exposition than last year. The American Locomotive Co. will permit the management to exhibit the Vanderbilt cup at the exposition. Last year's show was a remarkable success. It was largely attended not only by the people of the city but by visitors from all over the country. With this as criterion it is safe to say that the next show will be a record-breaker.

AFTER CINCINNATI SPACE

Cincinnati, O., Dec. 11—Although the application blanks for space at the Cincinnati show to be held at Music Hall from February 20 to 25, having been placed in the mail during the last few days only, there is already a decided demand for space, indicating that the exhibition this year will be, in every way, more comprehensive than any enterprise of the kind heretofore arranged for Cincinnati. The executive committee of the Cincinnati Automobile Dealers' Association

will conduct the show this year. It has been decided that the entire first floor of the south wing of the music hall will be given over to cars exclusively. Accessories, motor boats, flying machines and other special attractions, including the roof garden, will be located on the second floor.

SHOW AT LOS ANGELES

Los Angeles, Cal., Dec. 10—There is the greatest activity in motoring circles in southern California. Next Monday night in the Shrine Auditorium the lights will flash on and with a burst of music the 1911 show of the Los Angeles Motor Car Dealers' Association will be on.

Manager Walter Hempel and the show committee have been putting in some busy days. When the last bit of greenery has been strung and every light is in working order, Manager Hempel will give the order to rush the cars into their allotted spaces, and when the doors open Monday night as handsome a show as ever has been seen in the west will be the result. Thursday night has been set aside as society night.

BOSTON, THEN SYRACUSE

Syracuse, N. Y., Dec. 10—At a meeting of the Syracuse Automobile Dealers' Association it was definitely decided to hold the third annual show in the state armory during the week of March 14. M. W. Kerr again was elected chairman of the show committee. In selecting the date the association arranged, as usual, to follow the Boston show, which is dated from March 4 to March 11. It is understood that some of the Hub exhibits will be sent on. Negotiations for the use of the state armory for the week of the exhibition have been completed. As usual C. A. Benjamin, president of the association, will be prominent in the promotion of this show, which is expected to draw big crowds from this section of the state, where motoring is popular.

DEMAND FOR HARTFORD SPACE

Hartford, Conn., Dec. 12—From present indications the forthcoming show of the Hartford Automobile Dealers' Association which is to be held in Foot Guard armory the last week in February or the first week in March will be the biggest thing the show committee ever has attempted. A member of the committee states that two halls the size of the armory could easily be filled if all applications for space were considered. It is not unlikely that another hall may be rented and two shows operated by the dealers' association so that one admission would cover both exhibitions. The show this season will be one of service, greater use will be made of the floor space and the decorations, while out of the ordinary and somewhat unique, will be more along simplified lines than heretofore. Several novelties are to be featured during the exhibition.



LONDON, Dec. 5—The appearance of one or two new American cars on the English market has led a number of people to believe that the American manufacturers are about to invade this country with cars which they are unable to sell in the United States. Several articles already have appeared in the trade papers on the rumored invasion. Those who are in the know are well aware though that no such policy is in the minds of the American manufacturers. Doubtless there will be newcomers catering to the British trade in a legitimate and conscientious manner, but no American manufacturer can hope to establish a business on the lines which many of the English manufacturers appear to be expecting.

It is useless for any manufacturer to introduce a new car on to the British market and expect to sell a number of those cars without a vast amount of preliminary advertising, demonstration and convincing proofs that the car is constructed of the highest class materials and workmanship. To bring this home to the mind of the British buying public is no easy task, and even if a car is of British origin and British construction throughout and the whole history of its construction is known, the public is slow to respond. How, then, can it be that American cars, unknown as far as this country is concerned, can be shipped over and sold immediately in large quantities? Even if cars are sold at a very moderate price, say, \$750, the purchaser has first to be convinced that he is receiving value for this amount. Were the cars shipped to these shores well known to British users, and sold at considerably reduced prices, then, and only then, might there be some likelihood of sales in large numbers being effected immediately.

British Buyer Shy

Many cheap lines of cars have been introduced on to the British market from the continent, but the writer cannot call to mind any instance in which the public has responded, simply for the reason that before the British buyer parts with his money he must have absolute confidence in the article he is purchasing.

Certain American cars, which at one time were sold in this country, have left a very unsatisfactory impression, and although the American firms which are now well established here at the present time have to some extent effaced some of the ill effects of the early American cars, they have not obtained their present position without much expenditure of energy, time and money.

There are at the present time some 250 models of foreign cars advertised for sale in this country, the majority of which are well known, and in addition the number of models which are produced by British manufacturers will total about 200. There is, therefore, an ample selection for the British buyer, and newcomers must therefore expect a very small share of business



Our Foreign

in the early stages of this development.

To show what little hold American manufacturers have on the English trade at the present time, out of 121 exhibitors of cars at the Olympia exhibition there were only four exhibitors of American manufactured vehicles. It will be well for any American manufacturer who contemplates shipping cars for the British market to carefully study the conditions on this side before wasting money in a futile attempt to endeavor to persuade the British public to purchase cars with which they have no acquaintance, and which may or may not be cheaper than cars of well known European repute.

The complimentary notices which have appeared in the European papers regarding the products of the British manufacturers has added greatly to the prestige of the British firms, and has done much to convince the users of motor vehicles that England has at last reached such perfection that there is no need to go outside one's own country for the provision of reliable and efficient motor vehicles.

Everything points to the fact that manufacturers of imported cars that are not now well established in this country, have a very difficult and almost hopeless task before them in establishing sales on a paying basis. Great Britain is essentially a manufacturing country, and has now gained the leading position in the European motor trade. During the present year, that is, up to October 31 last, the imports from all countries have only increased 1.8 per cent over the figures of the corresponding period in 1909, while the exports had increased 67.4 per cent. All figures go to prove that the imports do not increase in the same ratio as the increased volume of the home trade.

Let it be remembered that in any event there is only a portion of the trade for importers, and that new firms catering for British home trade have not only the British manufacturers to compete against, but also the old and well established continental constructors, who have spent large sums of money in establishing themselves in this market. A very large percentage of British buyers will purchase only British cars, and the number of purchasers in that category is increasing year by year, and it is doubtful if the import figures will rise to any further appreciable extent.

Following are comments on the Olympia show from well known foreign critics, which go to show the high position held by the British manufacturers. Charles Faroux, the well known leader of the modern school of chassis designers in France, states, in *La Vie Automobile*:

"My hasty visit to the Olympia show gave me the impression that England has

made an attempt to maintain the leading position which it gained last year, and to attract visitors and foreign agents—and at our cost. We were foolish enough not to have an exhibition last year, and to let England get the lead. It is high time to make up for the lost ground."

As Uncle Sam Sees It

Washington, D. C., Dec. 10—United States Consul Albert Halstead of Birmingham, England, has the following in the Daily Consular and Trade Reports concerning motoring conditions in the United Kingdom:

Considerable interest is manifested in the report that 600 of a certain make of American motor cars are to be shipped to this country, and that these are to be offered at attractive prices, with inducements such as to furnish a number of accessories to the purchasers of every sixth car at the end of a year's use and to furnish an entirely new car to the owner of the car making the greatest mileage in a given period. One newspaper quotes a leading motor car manufacturer as saying that the American cars should sell well and advises British manufacturers to standardize a given type of car and push it for all it is worth, as is done in the United States.

Demand for Good Cars

There certainly should be a market for a reasonably priced, well made, perfectly adjusted, dependable car of comparatively low horsepower, because of the heavier taxation upon higher powered cars. The motor car industry in the United Kingdom is in a flourishing condition, but the cars, so I was informed some time ago by a manufacturer, can not be produced so economically because of the greater productiveness of the American motor car manufacturer, which enables it materially to reduce the cost. It was then stated that ultimately there would be probably a large shipment of American cars to this market.

Now that this movement seems to have begun, it is highly important to impress upon American motor car manufacturers the absolute necessity of sending over only thoroughly tested cars of proved character, cars that in every sense will be creditable to the American industry. The experience with the shipment of bicycles some years since was such as to make the average Englishman somewhat doubtful of the quality and character of American motor cars. One of the newspapers in referring to this large shipment of American cars, quoted a manufacturer, in reply to the inquiry as to whether it would be "the same experience as with American bicycles," as saying that he thought not, for the American motor car was of good quality.

Relations

There will certainly be an attitude of suspicion as to the quality of American cars in view of the experience with bicycles, and a number of times in conversations regarding motor cars the remark has been made that the American car is not so well made as the English, and the belief has been indicated that the English car is far better finished. In this connection it should be said that much stress is placed upon the finishing of cars and even greater stress upon the car meeting every claim made for it in durability, reliability, and strength.

There is apparently a good opportunity for American motor cars here, but manufacturers should appreciate that with an original prejudice against them the greatest possible pains are necessary to overcome that prejudice or a promising field would to a considerable extent be lost.

In the United Kingdom comparatively little attention has been given to the electrically-propelled vehicle, the development of horseless traction being on the lines of the gasoline motor. It has generally been argued in England that the electric vehicle is not suitable here because its use is practical only in the towns, it being very difficult to recharge batteries in the country. This prejudice would undoubtedly be difficult to overcome, so it would appear unwise unhesitatingly to advise manufacturers of excellent electric motor cars in the United States to endeavor to cultivate the British market. Nevertheless, an investigation of the field would, it seems, be worth while, provided such investigation were made by an expert. In favor of the electric motor car is the heavy tax on gasoline for motor purposes, and the fact that many of the electric supply stations in the United Kingdom are controlled by municipal authorities who are enterprising in their efforts to increase the use of electricity.

A British trade journal asserts that the simple, easily-controlled electric vehicle in its own sphere is in many ways superior to the gasoline motor car and that if it were accorded anything like the same attention as the latter demands and receives it would be the rule rather than, as at present, the exception on the streets of British cities.

One borough council in London is offering a rate of 1 cent per unit for a minimum annual consumption of 100,000 units taken at any one of the corporation's three electrical depots during certain hours; and this action may be traced to inquiries for a cheap supply for battery charges for omnibus and commercial vehicle purposes. A project for the construction of fifty electric drays and vans for hiring out to commercial firms is now on foot.

It is quite certain that electric supply

stations, whether controlled by municipal authorities or private companies, would be glad to make a suitable rate for electricity for batteries for electric vehicles provided there were any indication that in this way a larger demand for electrical supply would follow, particularly as batteries could be charged during the day, when the demand for electricity is so much less than early at night.

Conditions in Germany

Regarding motor vehicle regulations in Germany, Consul-General A. M. Thackara, Berlin, reports:

Since the new international agreement entered into at Paris on October 11, 1909, went into effect, on May 1, 1910, foreign motor vehicles temporarily operated in Germany are subjected to two different sets of regulation, depending upon whether or not they are vehicles of one of the contracting parties to the agreement mentioned.

If provided with an international passport, it is only necessary to present it to the customs official at the border, who affixes his stamp, after having convinced himself that the passport is properly filled out and still in force and that the regulations for the display and lighting of the number and the letter designating its nationality have been complied with. This passport is also to be presented for visé to a customs officer upon leaving Germany. As the United States was not a party to the international agreement, Americans are excluded from the benefits of the international passport.

Foreign motor vehicles without an international passport may be admitted into Germany if the driver can present to the customs official at the border or to the appropriate local officials in the interior a certificate from the proper officials in the foreign country or from parties officially authorized to issue such certificates to the effect that the vehicle in question complies with the local police requirements of his country. These certificates must state the name and residence of the owner, the name of the firm that manufactured the chassis, the factory number, the kind of motive power and the horsepower of the machine or of the motor, the weight of the vehicle and its loading capacity in kilos (1 kilo = 2.2046 pounds) or in number of persons, including the driver. These certificates must also be countersigned by the German consul having authority in the district where they were issued. Instead of the regular German driver's license, the driver of the foreign motor cars may produce appropriate local testimonials or certificates, also countersigned by the German consul. A foreign motor vehicle in Germany not provided with an inter-

national passport is furnished with a special elliptical number card, for which a fee of 2 marks, or 47 cents, is collected in the case of motor cycles and motor cars for a stay in Germany of only one day; in other cases it is 5 marks, or \$1.19.

If the above-mentioned certificates for a motor vehicle and testimonials for the driver can not be produced, the ordinary regulations for German vehicles and drivers apply. Application must then be made to the customs officers at the border or to the local officials in the interior, giving the name and residence of the owner, the manufacturer, and factory number of the chassis, etc., which application must be supported by the report of an officially designated expert who has inspected the vehicle. The prescribed fee for the inspection, if made at the residence or office of the expert, is 15 marks, or \$3.57, for a motor cycle and 20 marks, or \$4.76, for a motor car; if made elsewhere the fees are 20 and 25 marks, or \$4.76 and \$5.95, respectively.

A person making application as driver of a motor vehicle in Germany must present his birth certificate, an unmounted photograph of himself, a doctor's certificate as to his physical condition, especially with reference to his sight and hearing, and evidence that he has finished a course with some person or at some institution officially qualified to teach the driving of motor vehicles.

If the application is otherwise acceptable, the party is referred to an expert especially designated to examine such applicants. The examination is oral, and the applicant must also give a practical demonstration of his ability to drive a motor vehicle. The fees for the first examination, if held at the residence or office of the expert, are 10 marks, or \$2.38, for the driver of a motor cycle and 15 marks, or \$3.57, for the driver of a motor car; if held elsewhere the fees are 15 and 20 marks, or \$3.57 and \$4.76, respectively. The fees for subsequent examinations of the same applicant for vehicles of a different class or different kind of motive power are 5 and 7.50 marks, or \$1.19 and \$1.79, respectively.

Getting Driver's License

The tax on foreign motor vehicles in Germany is as follows: Motor cycles for a stay of not over 30 days in a year, 71 cents. Motor cars for the stay mentioned within a year: One day, 71 cents; 2 to 5 days, \$1.90; 6 to 15 days, \$3.57; 16 to 30 days, \$5.95; 31 to 60 days, \$9.52; 61 to 90 days, \$11.90. The days need not be consecutive. Those days during which the vehicle was in a German garage or repair shop for the purpose of repair or improvement, as well as the days during which the motor car may have been taken across the German border, are deducted, providing the card of admission or tax card was stamped by the customs official at the border on both leaving and returning into Germany.

LIKELY POOR COMPRESSION

ELKHART, IND.—Editor Motor Age—
I have a model 10 Buick, and for the first 8 months it gave me good service, but since then I have had continual trouble driving in high speed. When I give the engine the throttle the whole speed-changing mechanism seems to jerk and clank and will do it for an indefinite time. Or, when I have the engine throttled down to 8 miles an hour the same condition returns and the engine is hitting on all four. The whole speed-changing mechanism was taken out the other day, but nothing was found to be wrong. I have noticed several other Buicks doing the same as mine. Will Motor Age inform me what is the trouble.—Reader.

Your trouble probably is due to poor compression in one of the cylinders of your motor which gives a weak explosion and causes the jerky action of the car when the motor is subject to a hard pull at slow speeds. The remedy is to locate the cylinder having the weak compression by cranking the motor over slowly by hand, then grind the exhaust valve in that cylinder, and the inlet valve also if necessary. After grinding in a valve, one always should see that there is at least the thickness of an ordinary business card, or 8/1000 to 15/1000 of an inch space between the end of the rocker arm and the valve stem when the valve is closed, otherwise the valve may be held open a trifle and compression allowed to escape. Bear in mind that the jerky action of the car is due to a missing or weak cylinder and endeavor to eliminate the cause of the misfire or weak explosion. If ignition is suspected, simply remove the high-tension cables from the spark plugs, one at a time while the engine is running; hold the terminal of the cable about $\frac{1}{8}$ inch from the terminal of the plug and see if the spark will jump across regularly. If the spark at one plug is weak, remove the plug from the cylinder and see if the sparking points are not more than $\frac{1}{32}$ inch apart. Do not expect too much power from the motor before it is warmed up, when the car is running slowly on the high gear and when a poor grade of gasoline is being used. The greater the speed of a motor to a certain limit the more power it will develop.

CONCLUSION DRAWN IS RIGHT

Kalamazoo, Mich.—Editor Motor Age—
Through the Readers' Clearing House will Motor Age answer the following question: In the differential, such as is used on Cadillac cars, am I correct in my conclusions that when in a unit going straight ahead the wheels get equal power and speed, but the moment the unit breaks in turning corners or one wheel not getting the same traction as the other, from one of them being on ice, does the power all go to the one wheel having the least resistance? In my mind, such is the case because if the steering gear were so arranged as to allow the car to be turned short enough

The Readers'



FIG. 1—A CORRECT GRIP

one wheel would go backward and the other forward, and would allow one of the equalizing gears on the axle shaft to be used as a race course, so would not this always be the case the moment the unit was broken? This question may not be very clear, but Motor Age has probably been asked it so many times that it knows what I mean.—Philip F. Van Derkar.

In the spur-gear differential mechanisms as in those of the bevel-gear type, practically all of the power is transmitted to the wheel having the least resistance, and you are quite right in your conclusions.

BLAMES THE GASOLINE

Watertown, N. Y.—Editor Motor Age—
I have read with interest Mr. Norton's letter and the reply relating to carbureter troubles with his Maxwell A. A. car, and no doubt if Mr. Norton changes the adjustment of his carbureter before the engine gets warmed up, he will have to change it back again, as I have had this same experience the past 2 years with both the Maxwell and Buick cars, which I attribute to the poor quality of gasoline now delivered by the Standard Oil Co. If he will test his gasoline he probably will find that it will test only 60 to 64, which condenses very quickly when the temperature is below 40. We have been troubled so much in this way with our Maxwell cars that we have changed the carbureter for the Kingston ball type which I find is an improvement as there is no air adjustment on these, being automatic; and yet on cold mornings I find it necessary to open the needle valve one-half turn more until the engine warms up, or even after priming, the motor will stop after a few revolutions. In a few minutes' running, the needle valve may be returned to its normal position. I also find that where the carbureter is located near the front where it gets the cold air in winter, not nearly so good service can be obtained with low quality gasoline.

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

The best remedy for the Maxwell is to cover the manifold and carbureter with a kind of wool such as is used on steam pipes. This will protect it from the cold and frost and will remedy the choking very materially when the throttle is opened quickly. A carbureter arranged so that the needle valve can be adjusted from the dash like the model T. Ford is greatly appreciated in cold weather.—C. D. Warner.

LOOK AT THE CARBURETER

Kansas City, Mo.—Editor Motor Age—
I am having trouble with my 30-horsepower Velie car and wish Motor Age to help me out of my difficulty. My car misses but I cannot locate the miss. When running on a level, up hill, or on a pull, I can set the spark lever at any place, yet the miss occurs, but it is not caused by the spark so far as I can locate it. When the motor runs on a low gas throttle, it fires all four cylinders perfectly, but if I advance the throttle 1 inch on the sector the motor misses; I advance the throttle any distance further and the motor fires all four cylinders perfectly again, and will climb any hill in town. How can I overcome the miss.—C. J. S.

It has often been found that certain carbureters do not functionate properly on certain motors at certain speeds; and this most probably is the trouble in your case. If the trouble is characteristic of your car and has been present since you got it, the remedy is a more adaptable carbureter. If, however, the trouble is a recent development, the carbureter most probably needs a little cleaning and adjustment.

GRIP ON STEERING WHEEL

Kalamazoo, Mich.—Editor Motor Age—
Will Motor Age through the Readers' Clearing House kindly answer the following questions:

1—Kindly illustrate the correct and incorrect ways of holding the steering wheel in ordinary driving?

2—How does an open base two-cycle engine compress?

3—What is the correct regulation in thousandths of an inch for the spark plugs operated by the Remy magneto?

4—What kind of tire chains are the best for heavy road work, zigzag or the chains which go straight across the tires?

5—Which is correct for ordinary driving? Should the driver carry his feet

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

on the clutch and accelerator, on the clutch and brake, or on the brake and accelerator?—A Cadillac Driver.

1—The correct way to hold the steering wheel of a motor car is that way which enables the driver to make any ordinary turn in either direction without removing the hands from the wheel, which permits easy access to the engine control levers, and which is at the same time most comfortable. There is no absolutely correct position for the hands on the steering wheel of a motor car, that is adaptable to all drivers and cars; for, there are so many varieties in the sizes and positions of the steering and engine control mechanisms, and so much difference in the sizes and dispositions of drivers. When a good driver gets into a car and takes hold of the steering wheel, he assumes the correct position and hold upon the wheel instinctively. Put him on another car and in the same way he will assume, perhaps, another position and hold of the wheel, which will be, nevertheless, equally correct.

In Fig. 1, is shown the position assumed as correct by one of the best road drivers in the country; the right fore-arm rests upon the side of the seat and the right hand grips the wheel from underneath and at the position shown in the illustration; the left hand rests upon the rim of the wheel and is naturally gripped from above. This is the position most adaptable to the relative arrangement of the driver's seat and the steering wheel, and the one most likely assumed when driving on a smooth, straight road; while on a rough road or at speed, the right hand would most probably occupy a position a little higher up on the wheel and the left hand a little farther down, so that both hands would be about equally distant from the body. An incorrect position is illustrated in Fig. 2; it is, perhaps, the most comfortable, but at the same time the most inoperative one.

2—A two-cycle engine with an open base generally has an auxiliary charging cylinder. The new two-cycle Elmore engine, illustrated and described on page 17 of the October 27 issue of Motor Age, is a good example of this type.

3.—The advice given by the Remy Electric Co., in regard to the spark plugs of motors on which its magnetos are used, is as follows: Different motors require different plug gaps. About 1/32-inch,



FIG. 2—AN INCORRECT GRIP

which is equivalent to .0312 inch, between the sparking points is best for most motors. If the motor misses fire when running idle or pulling light, the plug gaps should be made longer. If the motor misses when pulling heavy, particularly at slow speed, the plug gap should be made shorter.

4—The opinions of drivers who have used both types of tire chains, differ as regards their relative merits.

5—Like the first question regarding the steering gear, relation of the feet to the pedals depends to a considerable extent upon the arrangement of the pedals and the disposition of the driver. The feet, however, should not be allowed to habitually rest upon the clutch or brake pedals, for this often causes the clutch to slip and the brakes to drag, with consequent damage to the friction surfaces of both. One foot should rest on the foot or floor board so that it can readily be applied to the clutch pedal, and the other, if generally used, to operate the accelerator should be trained to change quickly from the accelerator to the brake.

HUMMING GEARS

San Antonio, Texas—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—What causes the humming noise in the planetary transmission of my model 38 Overland, and how may it be overcome? This humming becomes quite bad when the machine is speeded up.

2—Does Motor Age recommend the use of leather tire protectors equipped with steel rivets? What causes them to sweat, and is this injurious?—A. M.

1—The humming noise in your planetary gearset most probably is due to the fact that there is an insufficient supply of grease in the case. Excessive wear also is a cause of excessive noise, and a remedy often is found in mixing graphite with

the grease used in the gearset. The only sure remedy is to replace the old worn gears with proper fitting ones.

2—Motor Age has no information on file relative to the service of the steel-studded leather tire protectors and would be glad to hear from readers who use them. The sweating may be due to moisture or water which has accumulated between the tire tread and the cover, or was absorbed by the leather, and which is driven through the cover by the heat generated in the tire from road friction.

TAXATION OF CARS

Los Gatos, Cal.—Editor Motor Age—I have just been reading the article in Motor Age dated from Paris on car taxation here and abroad, in the issue of November 24, and it seems to me it is liable to create a false impression, when the writer says there cannot be more than a few hundred dollars income from the 580,000 cars estimated to be in use in the United States after expenses of collection having been deducted. He also practically intimates that cars are not taxed in this country. We certainly do escape many of the annoying customs he describes, but he seems to have entirely forgotten that the owner must make an annual return to the assessor and after that comes the payment of taxes. Here in California, for instance, I paid \$2 for my license number when I bought my car, and from the correspondent's article in Motor Age many might easily imagine that was all the taxes ever paid on it or that had to be paid. Instead of that on the first Monday of each March I must return the car for assessment. If, for example, it is valued at \$1,000 and the tax rate is \$2 per \$100, for that year my taxes are \$20. If the rate is \$3 I pay \$30, which is quite enough. Of course there may be tax-dodging in motor cars as in stocks and bonds, but the former are rather more difficult to hide. The point I desire to make is this: An article such as I have quoted may fall under the eyes of some demagogic legislator who thinks he may gain notoriety and standing among a certain class by claiming that the motor cars of the rich are not taxed. When he gets to the legislature he makes it his business that they are. The result is a crop of motor car bills. It seems to me that Motor Age would be doing a service to its readers, who are largely owners, if from time to time it made it perfectly clear that motor cars are already quite sufficiently taxed instead of not being taxed at all.—F. H. McC.

Your contention that American motor cars already are taxed enough is not disputed, and in support of this Motor Age refers to the campaign against the wheel tax which was carried on a year ago by the Chicago Motor Club, when statistics were compiled which shows to what extent the assessor goes. In Chicago in particular each owner of a touring car

after paying \$2 annually to the state for a license has to pay a wheel tax of \$20 if he owns a touring car and \$12 if the car happens to be a runabout. Then come his personal property taxes. The cost of owning a car in Chicago is shown by an excerpt from the Chicago Motor Club's literature of a year ago which says: "An owner of a \$3,000 car, providing he pays his taxes as all good citizens should, will pay the sum of \$43.76 personal property tax, \$20 wheel tax, and \$2 for state registration, making the total cost of taxation on his car \$65.76 a year. On a \$1,500 car the rate would be \$21.28 personal property tax, \$20 wheel tax and \$2 state fees, which would make \$43.88."

AN INDIANA ROUTE

Roann, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the best route from Rochester, Ind., to East Chicago, naming the towns passed through. I would like all good roads if possible regardless of distance.—A Subscriber.

As published in the Official Blue Book, a popular road from Rochester to East Chicago is by way of Argos, Plymouth, LaPaz, Lakeville, South Bend, New Carlisle, Rolling Prairie, Michigan City, Otis station, Burdick station, Chesterton, McCool, Hobart, Gary and East Chicago. Another route from South Bend to East Chicago by way of Valparaiso, taking in New Carlisle, La Porte, Pinhook, Westville, Valparaiso, Wheeler, Hobart and East Chicago, is a trifle longer, but easier to follow.

EXPLAINS A KNOCK

Chicago—Editor Motor Age—The query of F. B. Bunn, Lawrenceville, Ills., in Motor Age, November 24, concerning a knock in his Jackson motor, may possibly be explained by circumstances within my own experience. I have a 1910 valve-in-the-head motor with heavy compression. My experience on hills was similar to Mr. Bunn's. The motor heated and the exhaust valves required grinding at short intervals. At from 15 to 30 miles on level roads the power was excellent, but on hills and low speed the motor pounded. The installation of a $\frac{3}{8}$ -inch fiber gasket under each cylinder seems to have obviated the trouble, as thereby the compression was reduced. The Jackson motor also has high compression and the difficulty with that and other motors of that type is to properly cool the exhaust valve cages and valves.—X. Y. Z.

ELIMINATING CONDENSATION

Chicago—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following? What is the best manner of placing a pipe line between an acetylene generator and headlights? I have had considerable difficulty in getting rid of the condensation, although under each lamp I have a V-shaped trap provided with a gas valve, but this does not seem to help very materially, as

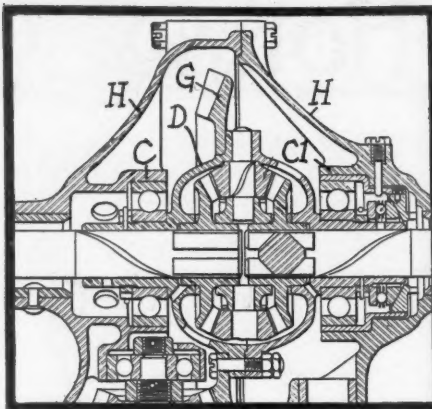


FIG. 3—LOCOMOBILE AXLE MECHANISM

some water still remains in the pipe line, choking same to some extent, causing lights to burn irregularly. Occasionally the line is blown out with gas from the Prest-O-Lite tank, but this does not improve them very much. The pipe line dips toward the traps. I do not experience the same trouble when using a Prest-O-Lite tank. I also would be glad to hear from any reader who has had similar trouble.—E. S. V.

The best method of placing the piping between the acetylene generator and headlights, is along the inside of the lower horizontal section of the channel of the frame. It is necessary that the line or leads from the generator to lamps be on as much of an incline as possible, and that the traps be of efficient design and located at the lower ends of the leads. The larger the leads or piping the better. If the piping is blown out by a stroke or two of the tire pump, before lighting the lights, and the traps drained, much of your trouble may be eliminated; and if the motor is allowed to run for a few minutes with the hood closed over the engine, so that the chill is taken out of the piping of the acetylene gas system, there will be less condensation and consequently less trouble from this source. Your trouble is characteristic of most systems in which a gener-

ator is employed, at this time of the year. Since water is used to generate the gas, and as considerable heat is generated from the chemical reaction which takes place between the water and the carbide, much of the water is carried off in the gas currents in the form of vapor. When this vapor comes in contact with the cold piping condensation is bound to occur, and unless provisions are made to either prevent the condensation, or catch the water which accumulates in the pipes when it does occur, the pipes will at times become partially choked, causing the lights to flicker, or entirely choked for an instant and the light or lights extinguished.

FINDING THE VOLTAGE

Dillonvale, O.—Editor Motor Age—We have a direct current of 250 volts. The thing I want to know is how to cut down this voltage so I can recharge a 6-60, three-cell storage battery. Please inform me just how many volts there will be passing through the battery after the voltage is cut down, so that I can use a voltmeter on the wires where they connect to the battery and see if the voltage is all right before I connect them.—R. Humphreville.

Providing a more suitable ammeter and rheostat, or resistance, are not to be had, and charging is to be done from a 220-volt circuit, the required resistance may be easily obtained by using lamps adapted to the voltage of the circuit. A 220-volt lamp of 16 candlepower will allow approximately $\frac{1}{4}$ ampere to pass through it, requiring twelve such lamps in parallel for 3 amperes; and as a 32-candlepower 220-volt lamp would consume about $\frac{1}{2}$ ampere, six such lamps would furnish resistance for a 3-ampere current. The charging rate for 60-ampere hour battery never should exceed the maximum of 10 amperes. As soon as the voltage rises to 2.5 volts per cell at the maximum rate, the current should be reduced to the minimum of 3 amperes and continued at this rate until fully charged.

A little light on the relation between voltage and amperage may be appreciated. Voltage, or electro-motive force, often expressed as E.M.F., is a technical term for the pressure of an electric current. Amperage, is a term referring to the speed at which a current is flowing. No matter what the pressure or voltage of a current may be, no more of it will flow through a circuit than the resistance will permit. If you have a 220-volt circuit no current will flow through it until it is complete; and if a 16-candlepower 220-volt lamp is inserted between the two ends of this circuit to complete or close it, then only $\frac{1}{4}$ ampere of current will be permitted to flow through that circuit. When the lamps are connected in parallel, by increasing the number of lamps in a circuit, the flow of the current is increased; which means, technically speaking, that by decreasing the resistance the amperage is increased. One lamp in a parallel circuit makes more resistance to the flow of a current than

NOTICE

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Seattle, Wash.—H. L.
Cincinnati, O.—A Reader
Duluth, Minn.—A. F. C.
Council Bluffs, Ia.—J. L.
Lawton, Okla.—A. B. C.
Charleston, Ill. Subscriber
Martelle, Ia.—A Subscriber
New York—A Subscriber
Hartford City, Ind.—Coil
Denver, Colo.—Reader
Roseland, Nebr.—A Subscriber
Chicago—Reader
Vincennes, Ind.—Chalmers 30 Driver
Vancouver, B. C.—An Interested Reader
New Richmond, Wis.—T. C. M.
Chanute, Kan.—A. A. H.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

two lamps. When using lamps for the purpose of varying the resistance and regulating the flow of current in a circuit, they always should be connected up in multiple or parallel, that is, one of the terminals of each of the lamps should be connected to one of the main wires and the other terminal of each lamp to the other main wire. The lamps should not be connected in series, because no variation of the current could then be obtained, for when one lamp of a series circuit is cut out the circuit is broken and no current flows at all; in a parallel circuit, however, the current is varied by turning on or off the lamps, one or two or more at a time, according to the degree of variation desired.

WANTS A SQUARE MOTOR

Jewell, Ia.—Editor Motor Age—Through the Readers' Clearing House kindly publish this article in response to Robert G. Davis of Hot Springs, Ark., where he seeks the advantage of a square to a long-stroke motor. The one great mistake of motor car manufacturers today is in the gear ratio of their machines. Generally assuming that the average country road driver is possessed with the speed mania as much as a track racer, since speed takes power, manufacturers are lengthening the stroke of their motors for no other purpose. This means increased piston travel, increased wear on bearings, and more vibration, which is the death of all machinery. My contention is this: It isn't the high speed of a motor that wears it out half as much as overtaxing a motor power by hooking it onto a high gear ratio, thus being compelled to labor under heavy throttle continually to do its work. It is the heavy throttle, heavy explosions on the pistons and continued strain on bearings,—in other words an overtaxed motor, that is the cause of its short life. Now change that 3-to-1 gear to a 4-to-1 and observe the result in the same motor car engine. To go up a certain hill with the 3-to-1 gear the throttle might be clear open, using a full charge of gas and causing excessive vibration, while with a 4-to-1 gear the throttle might not have to be over half way open. How many have crowded their cars up a hill until the engines commenced pounding and then, re-



ardless of spark, shut off the gas to a much lighter charge, noticed the pounding cease, and observed that the motor pulled nearly as hard. There would be no need of crowding or overtaxing a motor on a sensible gear ratio. I contend that 30 miles per hour is fast enough for any sane person to drive a motor car over country roads. Traveling at this rate on a 36-inch wheel and 4-to-1 gear would give me an engine speed of 1,120 revolutions per minute. I don't call that motor racing. The manufacturers are continually increasing the diameter of the wheels and using the same gear ratio that was formerly used on 28 and 30-inch wheels. I have in mind one firm that put a 37 11-to-1 gear ratio on a 30-inch wheel, which running at 30 miles per hour gives an engine speed of 1,221 revolutions per minute. This may be a trifle high speed, but they can climb the hills, buck strong winds, pull in mud, and the engine does its work easily. When manufacturers that drive on nothing but pavements can realize what we country people really need and gear their machines lower, instead of figuring out a different kind of a motor that will pull the high-gear cars faster, then and not until then will we have sane motoring and people will come to realize the real advantage of the motor car. Give me the square motor but a decent gear ratio.—R. W. DeLa.

COPPER WATERJACKETS

Chicago—Editor Motor Age—Will Motor Age kindly answer the following questions through the Readers' Clearing House?

1—Does a four-cylinder motor with cylinders cast separate and with copper waterjackets cost more to make than a four-cylinder motor cast en bloc with the waterjackets cast therewith?

2—What make of carburetor is used on the 1910 Cadillac 30?

3—Is a T-head motor considered better

than an L-type of motor, and if so, why?

4—How is the rated horsepower of motors found?

5—What is the best way to keep tires over winter when the car is put up?—H. F.

1—Motor Age has no information on file relative to the difference in cost in the manufacture of motor cylinders with copper waterjackets and cylinders with integrally cast jackets; but unless exceptionally efficient facilities are provided for the manufacture of copper water-jacketed cylinders, they are the more costly.

2—The 1910 Cadillac 30 uses a float-feed type of carburetor of Cadillac design and construction.

3—Both the T-head and the L-type of motor have their respective advantages, and it is largely a question of design and construction and purpose as to which is the most efficient. Among the advantages of the T-head motor are that it is possible to use larger valves with lower lift and consequent more noiseless operation; with the valves on opposite sides, more accessibility is obtainable; and a more symmetrical arrangement of the motor accessories permissible. With the L-head motor cylinder a higher thermal efficiency and greater fuel economy is claimed; a camshaft and camshaft gear are eliminated; there is a saving in the cost of manufacture; and there are some advantages in having all valves on one side of the motor. As for the number of motor car manufacturers of motor cars using L-head motors, there is more than 100 per cent more than there are in the T-type contingent.

4—The rated horsepower of motor car motors may be obtained by means of the A. L. A. M. standard horsepower formula:

$$\frac{D^2 N}{2.5} = \text{horsepower,}$$

in which D = diameter of the cylinders, N = the number of cylinders, and 2.5 is a constant. The stroke is not used in this formula, but it is taken into consideration as the formula is based upon a piston speed of 1,000 feet per minute.

5—About the best way to keep tires over winter is to wrap them in paper and burlap and store them in a dark dry place.

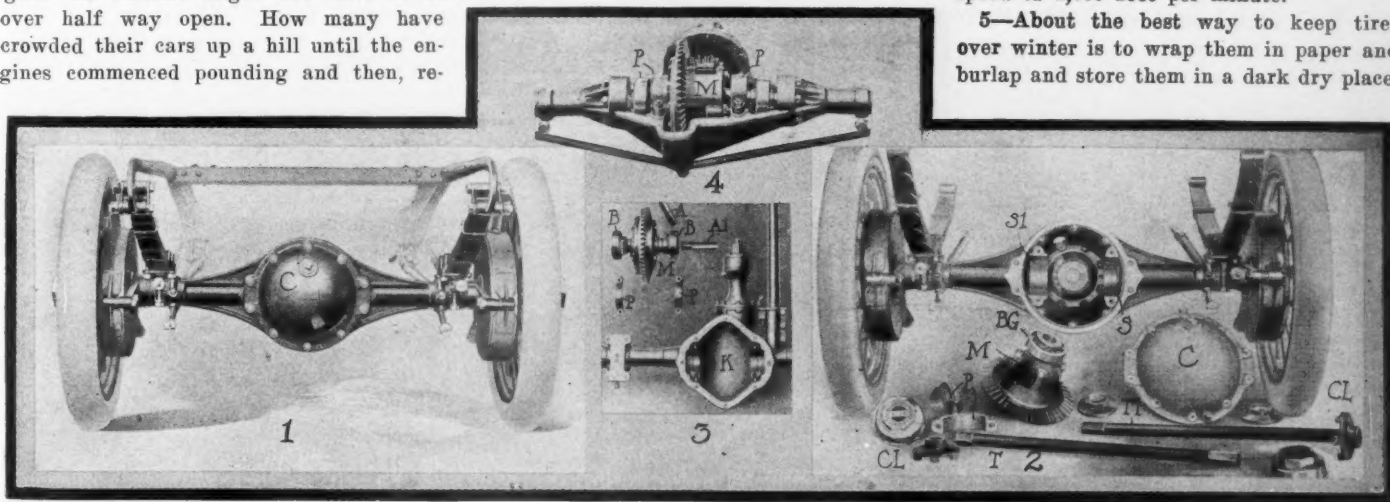


FIG. 4—ILLUSTRATIONS SHOWING MEANS OF SUPPORTING LARGE DRIVING GEAR AND DIFFERENTIAL MECHANISM OF FULL-FLOATING REAR AXLES

REGARDING BOSCH MAGNETO

NEW YORK—Editor Motor Age—In going over the articles in the November 10 issue of Motor Age on the races recently held at Atlanta, we note in that part especially referring to the free-for-all race held November 7, the statement that a "sheared pin on the magneto shaft fixed Harroun," and in the latter part of the same paragraph the sentence that "in the ninety-third lap, however, his engine went to the bad entirely, because of the accident to the magneto shaft, etc." Referring to the same incident, it is our belief that these statements are misleading to many of the readers of Motor Age, and we would point out that it appears from this that the shaft of the magneto itself was broken; this was not the case. The trouble was due to the breaking of what is commonly known as the pump shaft on the engine, and as this shaft drives the magneto it was rendered inoperative. As it is well known that all the Marmon racers are equipped with Bosch ignition, the above statements are liable to give the general public a bad impression of the reliability of our instruments, and we would appreciate it very much if Motor Age correct this impression. —Bosch Magneto Co., Otto Heins, President.

DESERT HARDSHIPS

Cincinnati, O.—Editor Motor Age—Few people who are unacquainted with the hardships to be encountered on southwestern roads appreciate the extreme danger experienced by drivers of the racing cars who were entered in the Los Angeles to Phoenix race, which started from Los Angeles November 5. In fact, it is difficult adequately to impress upon one who has not actually experienced the sensation of driving over a trackless wilderness and through a trackless desert, the extreme peril to which these plucky drivers were subjected, or the courage it required to drive these cars at a breakneck speed night and day during this contest, which was not only a race, but an endurance run as well in the strictest sense of the word.



Manufacturers'

The cars started from Los Angeles at 12 o'clock on the night of November 5, and the race finished at Phoenix on the afternoon of November 7. When the word was given each contestant shot out Main street, Los Angeles at a 60-mile-an-hour clip, and from that moment until the Colorado river was reached there was not a single letup by any of the contestants, except for such adjustments as might be rendered necessary, owing to the extreme strain of the terrible sand, bottomless chuck holes and other road conditions which can only be appreciated by those who have had experience on roads in the southwest. The strain on the driver as well as on the machine was so great that it is almost inconceivable that flesh or metal could stand up under it for the terrible, terrific drive of 485 miles from Los Angeles to Phoenix.

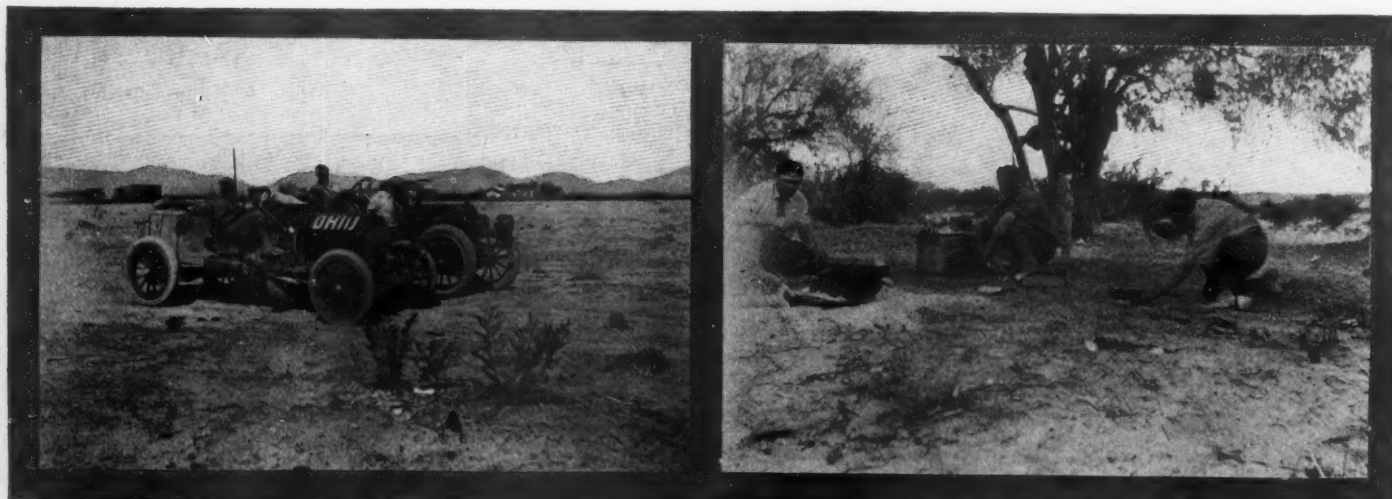
After being ferried across the Colorado river by Indians the drive to Phoenix was fraught with extreme peril, as for 125 miles it was over the trackless American alkali desert, with absolutely no road or trail except such as might have been blazed before on trial trips. In fact, the only way in which the contestants had any means whatever of knowing the general direction was by means of the compass, markers which they may have placed at different points on the desert during the pathfinding runs which each made on his own account prior to the race.

Probably for no other race is it necessary to make such elaborate preparations as for the Los Angeles to Phoenix run, owing to the hardships to be encountered, and the peculiar road conditions which exist in that country. Each contesting car, instead of being stripped of all surplus weight, in addition to extra tires and tubes, must carry the following equipment: No fewer than 40 gallons of gasoline, 25 gallons of oil, 6 gallons of drinking water and in some cases extra water for radiator,

two sleeping bags for driver and mechanic, canned food for meals enroute for 3 days for two people in case they are lost in the desert, cooking utensils, and last but not least a six-shooter is carried by both driver and mechanic as protection against the perils of the trip. Holes must be cut in the dash so the hot air can blow out to keep the motor cool, and also keep drivers warm at night. No floorboards are on the car; no muffler and with exhaust pipes extending to the rear or through the sides of the hood. In no event must the pipes be allowed to turn down so as to shoot the exhaust in the alkali desert, which would cause great discomfort to the drivers.

It is no uncommon thing for motorists crossing the desert to become bewildered and lose all sense of direction, in some cases being obliged to drink the water from the radiator and run for miles with simply a supply of oil in lieu of better cooling, the water holes being 75 miles apart. Here is a case where even the Official Automobile Bluebook is of no use, where the only guide is a compass, and it is not an unusual thing for a motorist to encounter a cloudburst, in which case the roads are rendered practically impassable, as in the case of the return from Phoenix to Los Angeles of six cars after the recent race, which were caught in a cloudburst and were 36 hours in the mud, and 22 hours without food; then, owing to the impassable condition of the road, the drivers were obliged to ship their cars from Salome through to Los Angeles. Here is where one is certainly next to nature in its most primitive form.

It is not an uncommon thing after a trail has once been laid out for sands to shift so that on the following day the trail will be 5 miles from the original point. Another thing with which the drivers on this race must contend is the



OHIO'S PATHFINDING TRIP FROM LOS ANGELES TO PHOENIX DEVELOPS HARDSHIPS OF DESERT DRIVING

Communications

fact that frequently after they have made a pathfinding trip, putting up their markers, cached oil and tires which they may need in case of an emergency, these markers are knocked down by wild beasts or vandals, who, in many cases, steal the oil and tires because it is always known before a race of this kind that these preparations are made and the incentive to deeds of lawlessness in an unsettled country are very great. The accompanying photographs will show some of the conditions encountered by the Ohio pathfinders before this race.—Ohio Motor Car Co.

BRISCOE ON FOREIGN CONDITIONS

New York—Editor Motor Age—To Americans who are not thoroughly conversant with foreign motoring conditions it seems almost incredible that there have not been more cars manufactured and bought in England. This probably is due to the fact that English makers have limited their field of sales by making generally only the high-priced cars which naturally can be purchased only by the richer class.

There is no actual census published of the number of cars manufactured in Great Britain, but from the registrations and import and export figures I arrive at figures which may be accepted as approximately the number of cars manufactured in England. There are now registered in England 108,773 motor cars, of which number there are 84,840 private cars, 15,181 trade vehicles and 8,752 public service cars. These figures give a total increase of 19,184 for 1909, divided as follows: Thirteen thousand four hundred and thirty-five private cars, 3,077 trade vehicles and 2,672 public service cars.

The imports for 1909 amounted to 3,666 cars, at a valuation of \$5,931,807.05; 4,855 chassis at a valuation of \$6,409,740.60, and

with a parts valuation of \$8,594,006 there is a total valuation of imports of \$20,935,553.65. Of the cars and chassis imported, 550 cars and 224 chassis having a total value of \$1,238,374.75 were re-exported; and also parts to the value of \$671,691.05. Deducting the re-exports, the net imports of cars and chassis is reduced to 7,747 cars. There were exported during 1909 2,583 cars, at a valuation of \$4,626,153.10, and 219 chassis valued at \$408,239.05.

From these figures it will be seen that the total cars built by British manufacturers is approximately as follows: Increase in registration as above, 19,184, deducting the net imports of 7,747 and adding the British exports of 2,802, makes a total of 14,239 British cars and chassis manufactured during 1909. The average value of car imports was \$1,615.05, while the average value of British-built exports is \$1,789.65.

These figures are interesting and show the value of imports and exports to and from the various countries in the world and a steady rise in the export of British-manufactured goods. In 4 years British exports have increased over 100 percent, whereas the imports and re-exports are almost stationary. At the present time the importation of American cars is insignificant when compared with the imports from France, which far exceed the imports from any other country. The comparative import figures for 1909 are as follows: France, \$12,224,992.45; Germany, \$4,003,650.75; Belgium, \$1,772,914.80; Italy, \$1,093,500.40; while the United States imported only \$709,167 worth of motor cars to England. The United States, during 1909, only supplied 3.3 percent of the total imports. The total turnover in money of the British trade in 1909 amounted to \$61,282,873.40.

At the present time there are some forty-five makes of pleasure cars in Great Brit-

ain and about fifteen additional occupied in building commercial vehicles exclusively. The foreign firms which have agents in England number over fifty. At least 50 percent of the British pleasure cars trade is in the hands of ten manufacturers, so that the number of vehicles per firm built by the remaining thirty-five must be comparatively small, according to my reckoning.

The majority of British manufacturers are building too many types and too few of any one type for a cheap production. The average number of models built by British firms is approximately four. The number of models offered for sale by fifty-four foreign firms in London is 241, and therefore it would appear that the continental manufacturers are even greater exponents than the British in the matter of multiplication of models.—Benjamin Briscoe, President United States Motor Co.

CARE OF TIRES IN WINTER

Akron, O.—Editor Motor Age—Now that many motorists are laying up their cars for the winter, information as to the proper care of tires during this period is timely. The time and trouble will be amply repaid by extra tire service next year. First: Jack up car off all tires and allow enough air to escape to release the internal pressure on the fabric, but not enough to totally collapse the inner tube. The tires in this condition should be kept from heat and wrapped to exclude the light. If the tires are in perfect condition this will suffice, otherwise observe the following directions: Second: Take off the tires, clean outside carefully, removing all dirt, oil, grease and foreign material. Do not allow water to get inside the casing. If any of the cuts penetrate to the fabric, have the tire inspected by a competent repairman and repaired or retreaded, as deemed advisable. Wrap each casing and tube in paper or cloth to keep away light and air and store tires in a cool, dark place. Clean all rust off the inside of rims and polish with graphite or stove polish to prevent further rust.—Firestone Tire and Rubber Co.



TRIP FROM LOS ANGELES TO PHOENIX THROUGH DESERT TESTS A CAR'S ENDURANCE

rect. The crankshaft is carried on four bearings, and the two center ones have double pockets, as illustrated. The oil which overflows from the troughs G drains back into the reservoir R and is ready to be re-circulated by the oil pump. In order to certify to the driver that the oiling system is in operation a sight-feed glass is mounted on the dash. The supply of oil for the reservoir is furnished by a large filler cup located on one of the arms of the motor. With this system from 500 to 750 miles of road travel is claimed by one filling of the reservoir, which has a capacity of from 2 to 3 gallons. In addition to these oiling arrangements there is the conventional oil ring R on the rear end of the crankshaft and which is used to avoid leaking of the oil. The oil is thrown from the crankshaft bearing by this ring and drains back to the crankcase. In Fig. 2 is shown the method of driving the oil pump through a vertical shaft K, the drive being taken from the intake camshaft. L1 shows the tube connection with the sight feed on the dash.

Viewing the motor structurally, there is one detail which must not be overlooked, and this is the employment of a close-grained semi-steel casting used in the upper half of the crankcase. This metal is used because of the rigid and strong construction it gives, both of these being factors in maintaining the alignment of the four bearings carrying the crankshaft. The twin cylinder casting with opposite valves take aluminum covers for the waterjacket heads. After being cast the cylinders are pickled to remove the core sand, rough machined, heat-treated to re-

move the tension of the scale on the outside, bored, enameled, and finally ground to within .0005 inch. Each piston carries three rings, each of which is a separate casting instead of being cut from a cast-iron sleeve. In manufacture these rings are machined only on the outside and the upper and lower edges. The pistons are machined to .001 inch and there is a variation of .003 inch at the top to take care of the expansion. The connecting rods are $12\frac{1}{4}$ inches from center to center, and they are adjustable at their upper end, the casting being split on one side at K, and at the lower end the cap is retained by

two bolts fitted with hex-head nuts, which are locked in place by a spanner plate, which fits around the hex-head of each nut, the plate itself being secured by a cotter pin.

One careful detail of construction is shown in the water system, Fig. 4. The pump WP is on the forward end of the magnetoshaft, there being a coupling J between it and the magneto, which is carried on the platform M. Uniting with the pump is a short length of hose which conducts the water into a three-section intake pipe. The three sections, 1, 2, and 3, are united by threaded unions U. These three sections are of different internal diameter, 1 being the largest, 2 the next, and 3 the smallest. The return pipe from the jacket tops to the radiator is tapered.

In the ignition field a latitude of options is given, the Premier Motor Mfg. Co. still listing its low-tension make-and-break system with Bosch magneto and also introducing a high-tension Bosch dual system, and a third combination in the use of a low-tension Bosch for the make-and-break and jump spark system with battery and coil. Where the make-and-break igniters are used they are located above the intake valves and in high-tension systems the spark plugs are given the same location. The same accuracy of construction which has been used in the make-and-break mechanism in the past is continued for next year. The vertical igniter shafts are driven at the bottom through spiral gears from the intake camshaft. On the upper end of each shaft is an operating cam controlling the mechanism for the

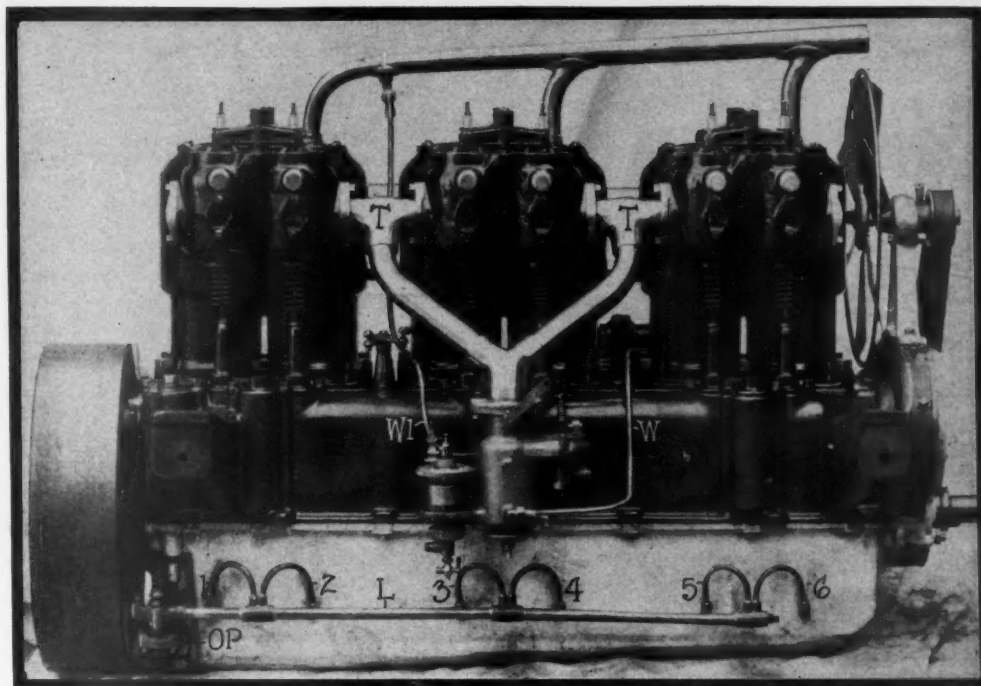


FIG. 3—CARBURETER SIDE OF PREMIER MOTOR SHOWING STROMBERG CARBURETER, WITH HOT WATER CONNECTIONS W AND W1, AND ALSO THE UNIONS T BETWEEN THE CYLINDER CASTINGS, THUS DOING AWAY WITH A LARGE MANIFOLD

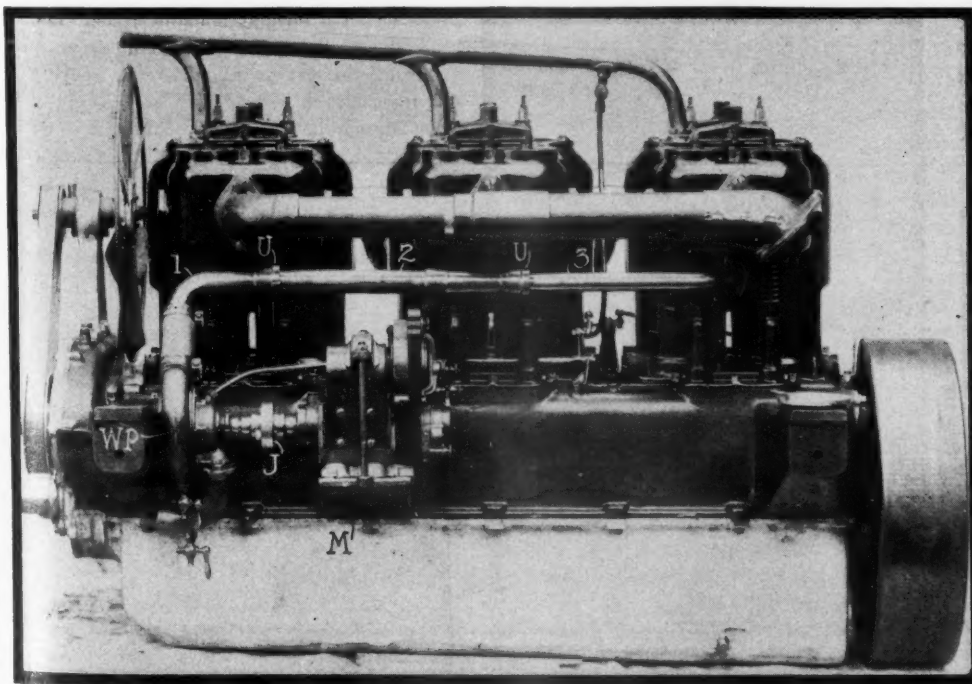


FIG. 4—EXHAUST SIDE OF PREMIER MOTOR SHOWING WATER PUMP WP, MAGNETO M AND COUPLING J BETWEEN THEM. THE INTAKE WATER PIPE IS MADE IN THREE SECTIONS, 1, 2 AND 3, OF VARYING DIAMETERS WITH UNIONS U CONNECTING THEM

PREMIER SIX-60 AND FOUR-40 FOR 1911 TRADE

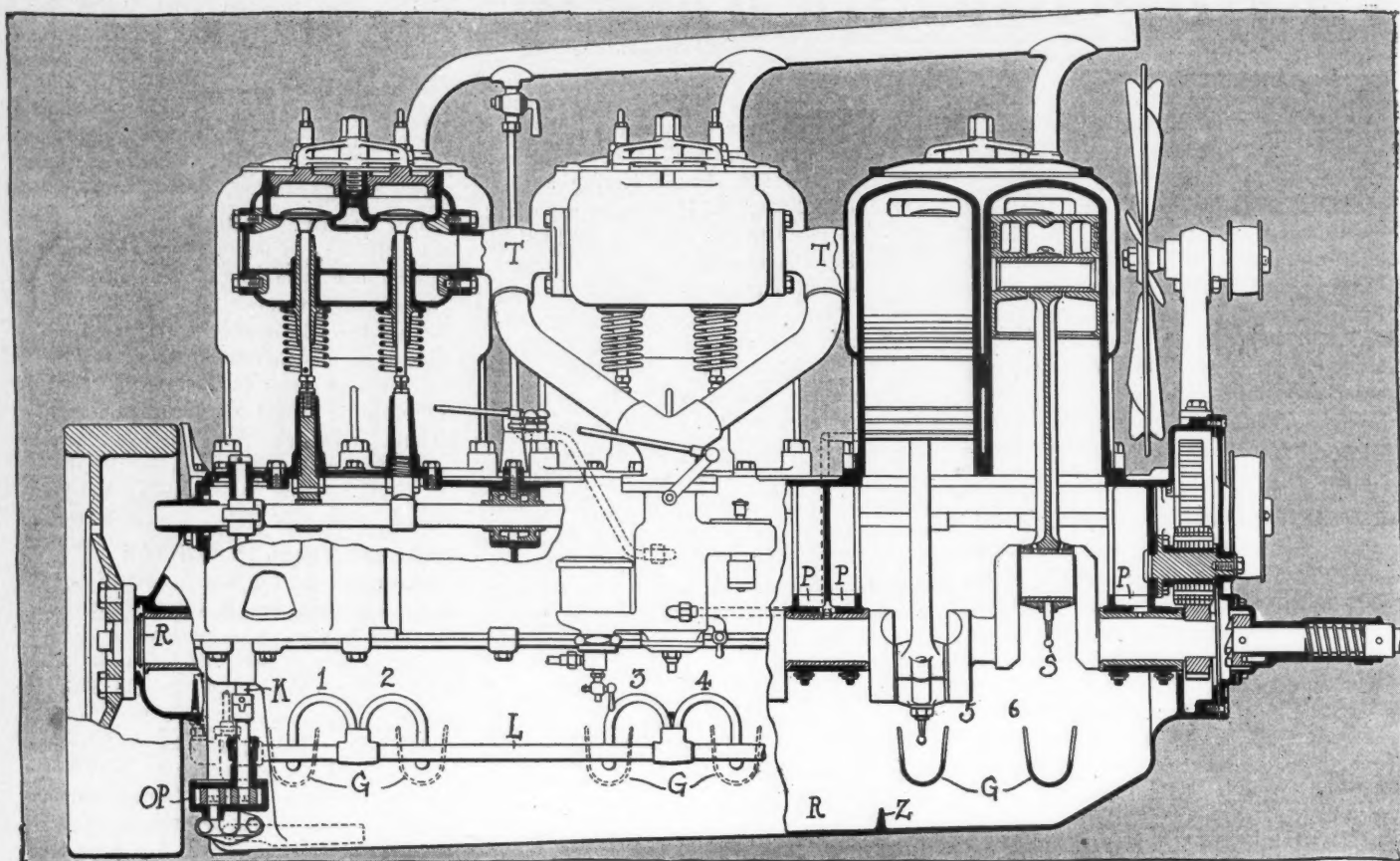


FIG. 1.—SIDE ELEVATION AND SECTION OF 1911 SIX-CYLINDER PREMIER MOTOR SHOWING THE NEW CIRCULATING OILING SYSTEM THAT IS USED

FOR next season the Premier cars will be manufactured in two models as they are this year, both incorporating a few important changes. The two models are known as four-40 and six-60, both motors employing the same size of cylinder castings, having a $4\frac{1}{2}$ -inch bore and $5\frac{1}{4}$ -inch stroke. The leading details of construction in these motors are shown in Figs. 1, 2, 3, and 4, practically all of which details apply to the four-cylinder types. Throughout the chassis the four and six are practically alike, employing a multiple-disk clutch, three-speed selective gearset, a patent type of rear axle, but differing in wheelbase and tires. The wheelbase of the six is 140 inches and that of the four 126. The six uses 36 by $4\frac{1}{2}$ -inch tires on front, and 5-inch sizes on the rear in the touring car models, whereas the four uses 36 by $4\frac{1}{2}$ inch sizes all around. The six uses a Stromberg carburetor, the four a Schebler.

Perhaps one of the most important changes is the installment of a circulating oiling system, which succeeds the mechanical oiler, mounted external-

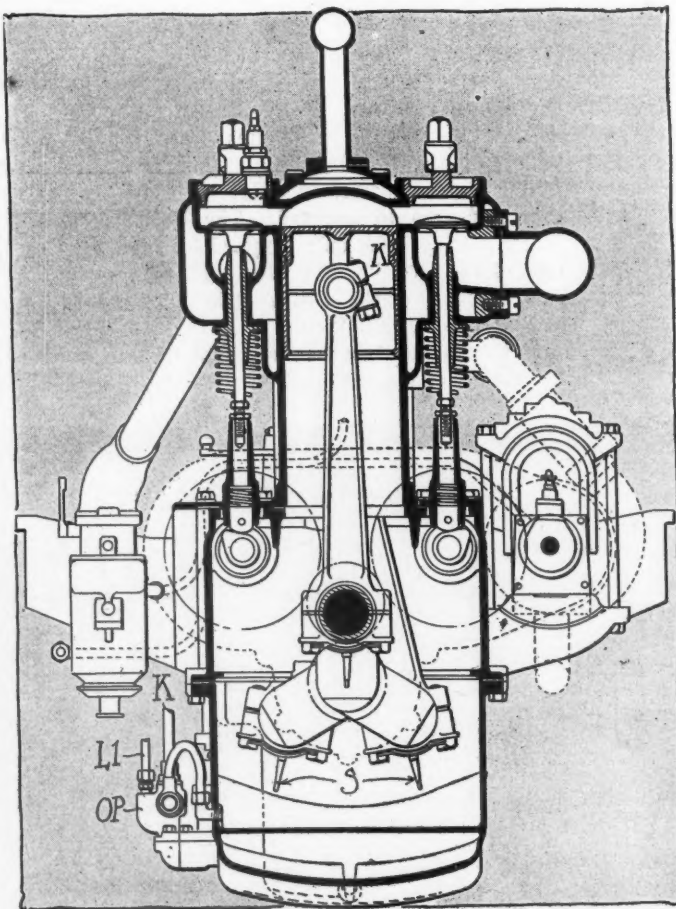


FIG. 2.—VERTICAL END SECTION OF PREMIER 1911 MOTOR

ly on the crankcase this season. Fig. 3 gives a general introduction to the oiling system. The lower part of the crankcase, an aluminum casting, is made with an oil reservoir. A gear-driven oil pump OP draws its supply from this reservoir and delivers it through the external lead L to six branches designated 1, 2, 3, 4, 5, and 6. Fig. 1 shows where these branches lead to. They empty their supply of oil into troughs G, which are moulded into the lower half of the crankcase. These troughs are of such shape that the oil level is always relatively the same irrespective of the road grade. On the bottom of each connecting rod is a small spoon S, which has a hole leading to the connecting rod bearings. These spoons dip into the oil supply in the troughs and create a splash as well as conducting oil to the connecting rod bearing. The spoons are said to be of such proportion as to supply enough oil to the cylinder walls, etc., without causing smoking. Pockets P above the different crankshaft bearings are filled from this splash and from them the oil enters the bearings di-

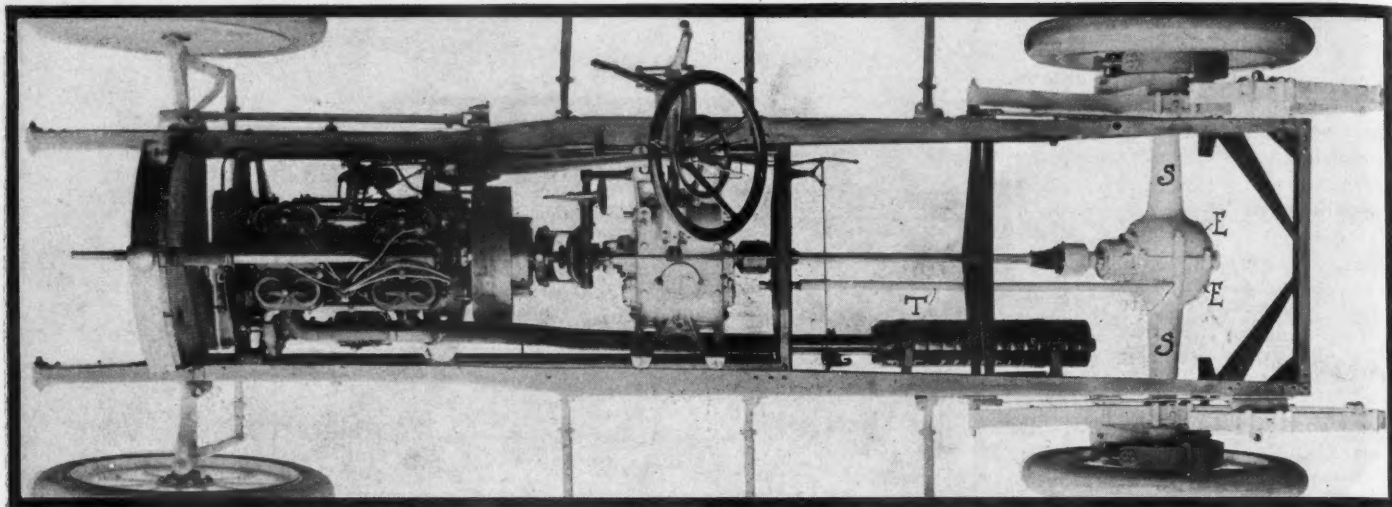


FIG. 5—PREMIER FOUR-CYLINDER CHASSIS WITH REAR AXLE DETAILS ILLUSTRATED, THE AXLE BEING INTERNALLY RIBBED WITHIN THE DIFFERENTIAL HOUSING AS WELL AS WITHIN THE LARGER-DIAMETER PARTS OF THE SLEEVES, SO A TRUSS ROD IS NOT USED

two cylinders in each casting. A cushioning device is used on the hammer levers, this being made use of to give a quicker break as well as to prevent the pitting of the platinum points on the igniter. An example of the accuracy in the manufacture of the parts entering into the make-up of the make-and-break system is that the shafts which extend through the igniter caps into the cylinder are only accepted if exact in size, a variation of .0001 not being allowed.

The Premier transmission system is best shown in Fig. 5, a plan view of the four-cylinder chassis. The gearbox is located amidship direct on the side frame members; the multiple-disk clutch is carried in the flywheel, and between the gearbox and rear axle is a propellershaft with two universals. The rear axle is a special Premier construction. The clutch details appear in Figs. 7 and 11. In all twenty-one disks or plates fitted with cork inserts are used. The driving set G, Fig 7, has lugs L on the periphery of each disk which fit in slots in the clutch cover C, the latter being bolted to the flywheel. The driven set have keys on the inside of each disk which fit into the clutch spider, this spider being formed with a square

hole into which fits the front end of the square clutchshaft. Engagement is by coil spring S. The clutch spider is supported by the annular bearing mounted on the rear end of the crankshaft. Disengagement, or separation of the disks, is obtained by little spiral springs S1 fastened to the driving disks and which force the disks apart as soon as the tension of the spring S is taken off of them. The cork inserts in the disks are used to prevent gripping.

Fig. 10 shows the details of the three-speed selective gearset, the set being carried in an aluminum case. In all five annular ball bearings are employed. The short shaft carrying the master pinion P is carried on two races, 1 and 2, of these bearings. On the mainshaft MS are carried two sliding units S and S1, the latter

being a ring-type gear bolted to a hub portion which slides on the shaft. The secondary shaft carries integral flanges F to which the ring-type of gears are bolted. The gears are cut from nickel steel forgings. High speed or direct drive is through a set of three jaws on the opposing faces of gears P and S. The rear axle is shown in Figs. 5, 6, and 9. The housing part consists of tapered axle tubes S formed with bell-shaped expansions on their inner ends, these expansions when bolted together comprising the differential housing. The axle is made without a truss rod, the housing being rendered sufficiently strong by an internal system of webbing, as illustrated at W, Fig. 6. The smallest diameter and consequently the strongest part of this axle sleeve is at the spring seating, which is the point of greatest load. The differential is carried on a set of roller bearings R, and the pinion P is located in a special housing H, so that it is possible to have a bearing 1 at the rear of the pinion and another bearing 2 at its forward end as well as a double set of thrust bearings. The housing H1 forms a complete cage for the pinion excepting that it is cut away to allow of proper meshing with the pinion P. The pinion P

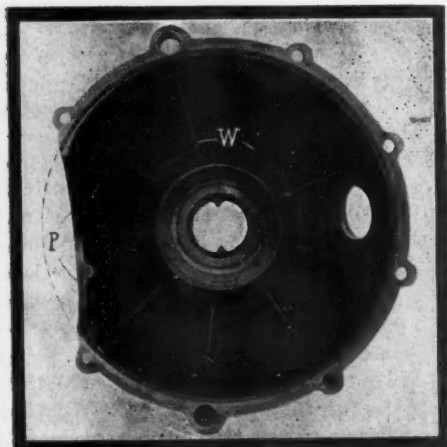


FIG. 6—INTERNAL RIBBING ON PREMIER AXLE AND DIFFERENTIAL

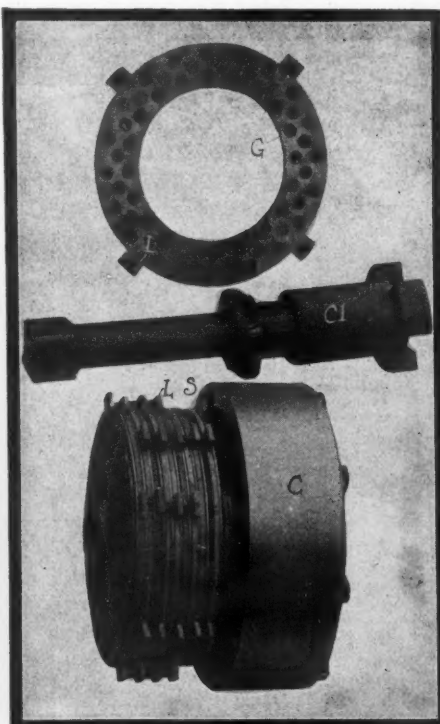


FIG. 7—THE PREMIER MULTIPLE-DISK CLUTCH WITH CORK INSERTS

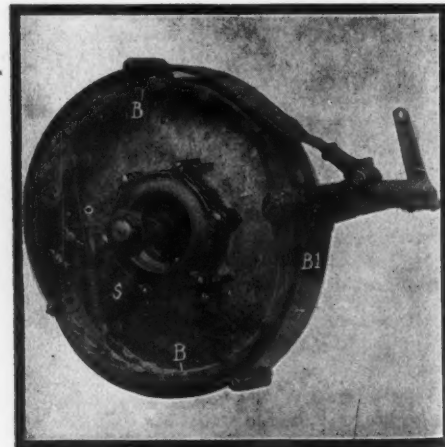


FIG. 8—PREMIER INTERNAL BRAKES WITH CORK INSERTS

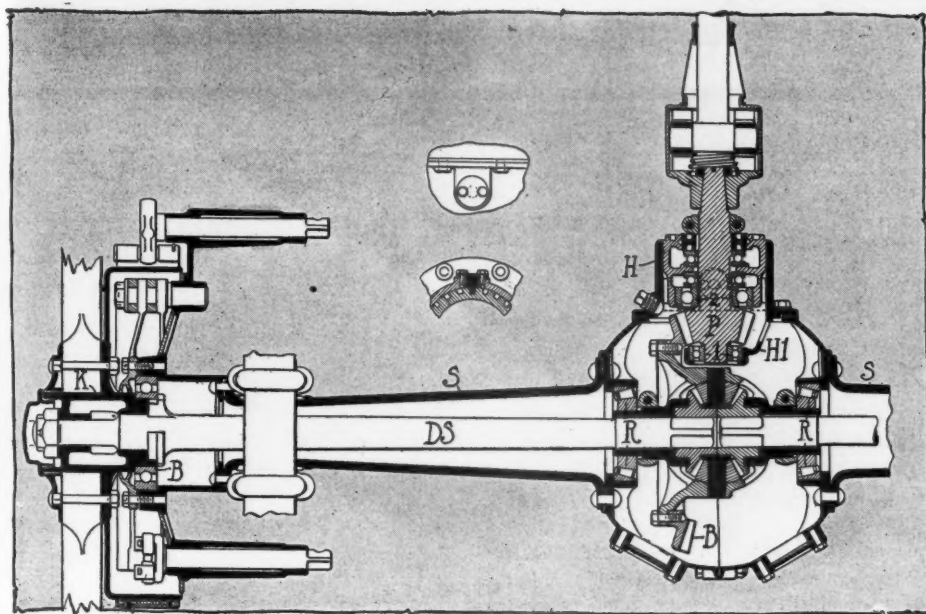


FIG. 9—STRUCTURAL DETAILS OF PREMIER REAR AXLE SHOWING HOW THE PINION P IS INTEGRAL WITH ITS SHAFT AND IS CARRIED ON TWO RACES 1 AND 2 OF SCHAEFER BALL-BEARINGS. THIS PINION IS WITHIN A CASTING H1

is a solid forging with its shaft. In this axle each road wheel is carried on a single annular ball bearing B. The axle hub K, in turn, being fitted on the drive-shaft DS instead of the driveshaft having the usual end clutch for interlocking with the wheel.

The Premier brakes have a total friction area of 526 square inches. The internal set, operated by pedal, is made up of bronze shoes fitted with 44 cork inserts, which act as a cushion when the brake is first applied. In Fig. 8 is shown the expansions in the shoes for carrying these inserts. The usual spring S is in place to prevent dragging. The external band B

is a fiber-lined one bearing direct against the steel drum. As Fig. 5 shows, each set is applied through a transverse equalizer extending through slots in the frame member.

The Premier running gear is built around a pressed steel construction, which is offset at the dash and dropped in front of the rear axle. Fifty-inch three-quarter elliptic springs are used in the rear and 36-inch semi-elliptics in front. The forward axle is an I-beam forging with Elliott type jaw ending. Imported annular thrust bearings are used in the top of the steering knuckles to take the load. Each front wheel is carried on two races

of Timken roller bearings. The steering is through worm-and-gear mechanism. The gearshaft is mounted on eccentric bronze bushing, thereby providing adjustment between it and the worm. Above and below the worm is a ball thrust bearing.

MOTOR CAR LITERATURE

Those interested in the commercial end of the industry will find the 1911 catalog of the Atterbury Motor Car Co., Buffalo, N. Y., of particular interest. Light delivery wagons, 1, 2, and 3-ton trucks, gasoline trucks, sight-seeing cars, ambulances, etc., are all listed, described and illustrated in a thirty-two-page catalog.

From the Haynes Automobile Co. is a booklet containing fac-simile letters from users of the Haynes cars.

The Firestone Tire and Rubber Co., Akron, O., has issued a new instruction booklet on its quick-detachable demountable rims. Several illustrations detail the methods of operation.

A 28 by 42-inch poster from the Cole Motor Car Co., Indianapolis, Ind., tells of its victories in the Massapequa sweepstakes at the Vanderbilt cup meet.

A twelve-page booklet from the Hazard Motor Mfg. Co., Rochester, N. Y., details the Hazard motor for 1911. Several illustrations accompany the text, with a center-page illustration showing the method of mounting the Hazard motor in a chassis.

A dainty booklet has been mailed by the Chicago Automobile Club illustrating the clubhouse and the annex. Several interior views are shown of the new banquet, dining and billiard rooms.

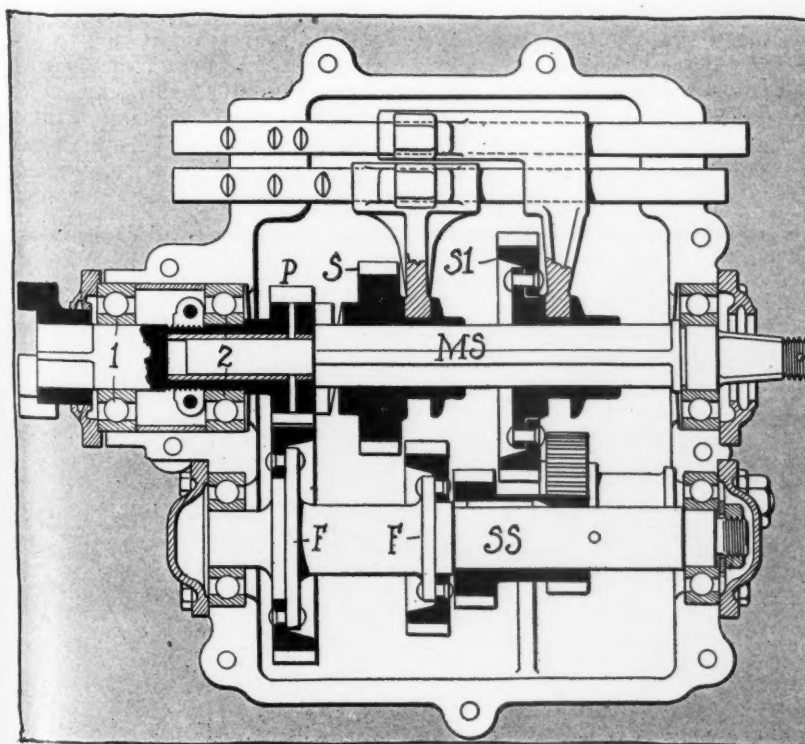


FIG. 10—HORIZONTAL PLAN AND SECTION PREMIER GEARSET

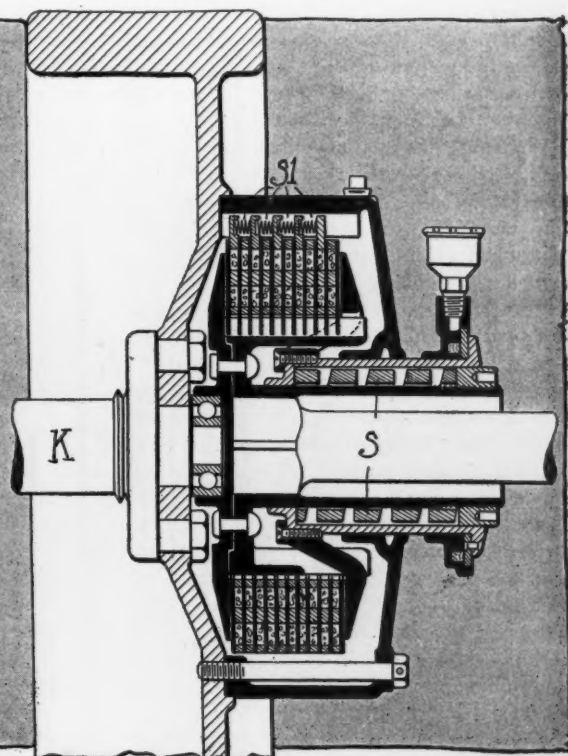


FIG. 11—SECTION PREMIER CLUTCH

HAZARD UNIT POWER PLANT IN TWO SIZES

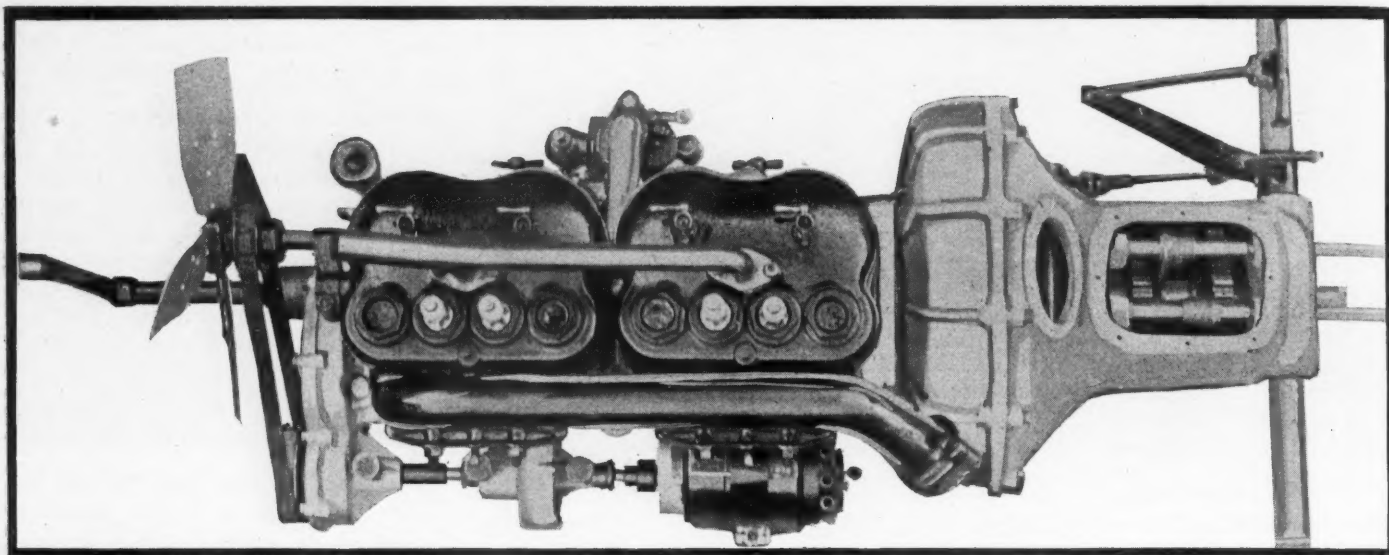


FIG. 1—HAZARD UNIT POWER PLANT COMPRISING A FOUR-CYLINDER MOTOR, MULTIPLE-DISK CLUTCH AND SELECTIVE GEARSET, ALL CARRIED ON A THREE-POINT SUPPORT

WITHIN the last few years the question of motor construction has received a vast amount of attention, and those concerns making a specialty of building motors for sale to different assemblers of cars have shown a spirit of progress that outrivals many of the old manufacturers who have been building their own motors since their entry into the industry. A concern which has entered the motor business with a scientific understanding of the problems involved is the Hazard Motor Mfg. Co., Rochester, N. Y., which company is marketing a unit power plant made up of a four-cylinder motor, a multiple-disk clutch and a three-speed selective gearset, all three rigidly connected and mounted on a three-point support. Fig. 1 shows the general layout of this unit plant, the motor having its L-type cylinders cast in pairs, with valves on the left side. Although both sets of valves are on the left, the carburetor is on the right side, the intake pipe from it passing between the cylinder pairs. On the left of the motor are grouped the magneto at the rear and a water pump in advance of it, both driven through the same shaft; and on the forward end of this shaft is a pulley for fan drive. To the rear of the motor is a large casting, entirely enclosing the flywheel, which carries the multiple-disk clutch, there being an oval inspection plate K, Fig. 4, through which the clutch may be oiled. Back of the clutch housing comes the selective gearset, which is supported at the rear at two points through the tubular cross member T, best shown in Fig. 4. The third point of support in this unit power plant is at the front end of the motor. In Fig. 2 the multiple-disk clutch carried on the flywheel is exposed, as is the housing H, with G forming the front end of the gearbox. The clutch pedal P is shown.

The details of construction in the Haz-

ard motor all show care of construction and design. The cylinders have $3\frac{3}{4}$ -inch bore and $4\frac{1}{2}$ -inch stroke. In order to reduce the side pressure on the pistons during the explosion strokes the center line of the cylinders is $\frac{3}{8}$ inch to the side of the center line of the crankshaft bearing, a construction that is being adopted by many makers today, and one which is claimed to be of considerable increase in power. The crankshaft is a high-carbon steel forging, Fig. 3, carried on three Cadium bronze bearings and having an integral flange to which the flywheel is bolted. Connecting rods are open hearth steel forgings, with the connecting caps secured by two bolts, shims being inserted to facilitate adjustment. The lower ends of these rods carry die-cast Cadium nickel bronze bushings. The wristpin bearing is 1 inch in diameter by $2\frac{1}{8}$ inches in length. Each piston carries three eccentric compression rings above the wristpin and four oil grooves at the bottom.

The oiling system employed is a combination force feed and gravity. As Fig. 4 shows, there is a reservoir R in the base of the crankcase, and an oil pump OP driven by a vertical shaft forces the oil through a channel in the engine base to pockets over each of the crankshaft bearings and also to the lower ends of the connecting rods. At each of these points a stream of oil is provided. Once used, the oil is filtered and recirculated.

A conventional cooling system is made use of, excepting that the water and gas manifolds are cast together, where they pass between the cylinder castings, the value of uniting these castings being that they cool the mixture, tends to chill the water, and the warmed water on the other hand prevents the mixture from condensing. One is an assistance to the other and vice versa. This company also has a larger sized motor built along the same lines and of the same general design, the cylinders are 4 by $4\frac{1}{2}$ inches.

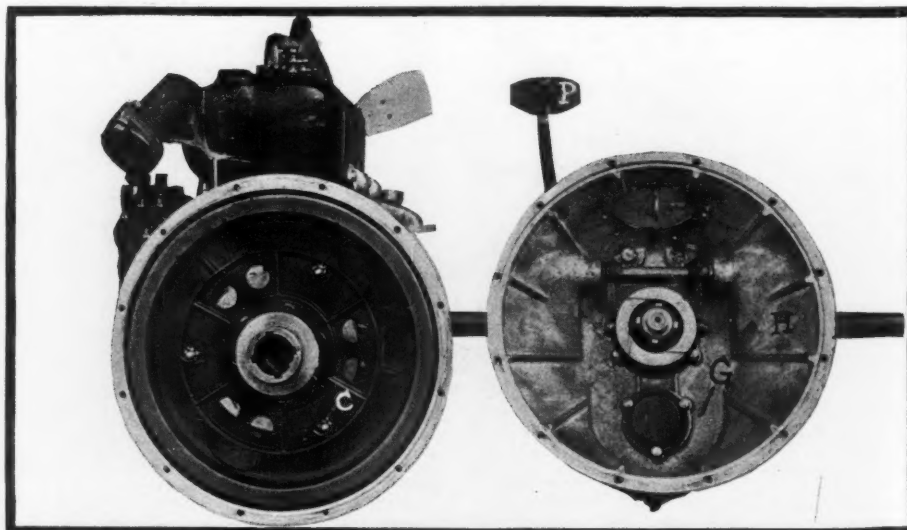


FIG. 2—SHOWING CLUTCH C ON HAZARD MOTOR—ALSO INSIDE OF CLUTCH HOUSING H AND FRONT END G OF GEARBOX, AS WELL AS CLUTCH PEDAL P

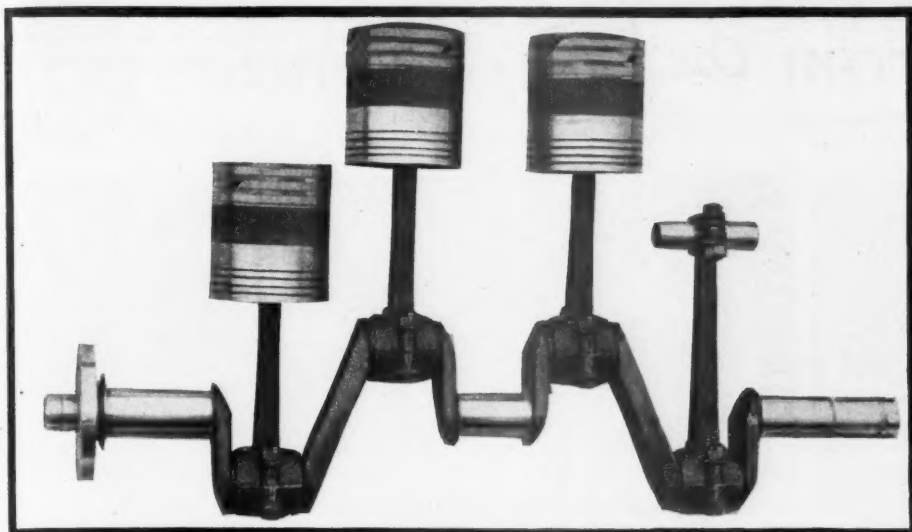


FIG. 3—CRANKSHAFT, CONNECTING RODS AND PISTONS OF HAZARD MOTOR

The clutch system in either motor consists of the usual sets of alternate disks, operating constantly in oil. A stream of oil flowing onto the disk when the motor is in operation. The gearset operating selectively gives three forward variations. It is provided with an interlocking system to prevent engagement of two sets of gears at the same time. A compact job is made of the two shifter rods, which are located in the top center of the case and extend to the rear.

Some Motor Details

Some of the motor details of the 4 by 4½-inch size are: Front crankshaft bearing 1½-inch diameter, 2¾ inches long; center crankshaft bearing, 1½ by 2½; rear crankshaft bearing, 1½ by 3½; crankpin bearings, 1¼ by 2¼; piston pin bearing, 1 by 2½; camshaft diameter, ⅞ inch; flywheel diameter, 16 inches; offset

of cylinder, ⅜ inch; outlet of water manifold, 1¼-inch diameter; outlet of exhaust

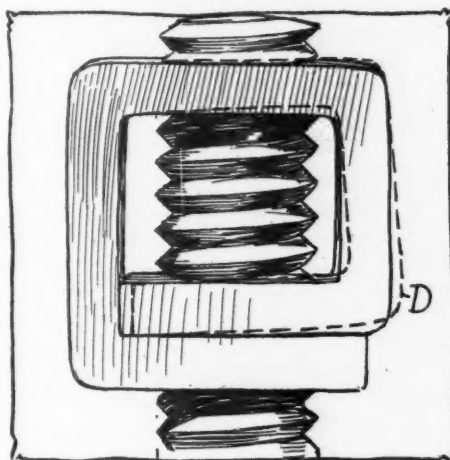


FIG. 5—THE LOOP LOCK NUT

manifold, 2 inches in diameter; and weight of unit, 450 pounds. The general design of both motors is the same in every respect, differing only in the matter of size and strength of parts.

Novel Self-Locking Nut

The Loop Nut Mfg. Co., Madison, Wis., of the character shown in Fig. 5. It is comprised of a loop of metal with the ends overlapping each other, as indicated. When the loops are made up the natural position that the ends will take in respect to each other is indicated by the dotted line D. When this loop nut is screwed down on to a threaded bolt, as illustrated, there will be a tendency of the ends to spread apart and take up their natural position, thus taking a firm grip upon the threads and preventing the nut from working loose. There is no jamming of one nut down upon another and distorting or stretching the threaded end of the stud or bolt, and the small sizes for ignition appliances may be put on or taken off without the aid of a pair of pliers, so that twisting off of the terminals would thus be eliminated.

Thermoid Tire Reinforcement

The Thermoid Rubber Co., Trenton, N. J., manufactures a tire reinforcement which might be termed a smaller size of casing made without beads and which can be inserted within the regular casing when it becomes worn and has holes that would not protect the inner tube from blowouts. The reinforcement is a combination of rubber and fabric, made about ¼ inch thick in the tread and tapering gradually to little more than half of this thickness at the edges. It is designed specially to protect the tread of the tire and is claimed not to affect the resiliency.

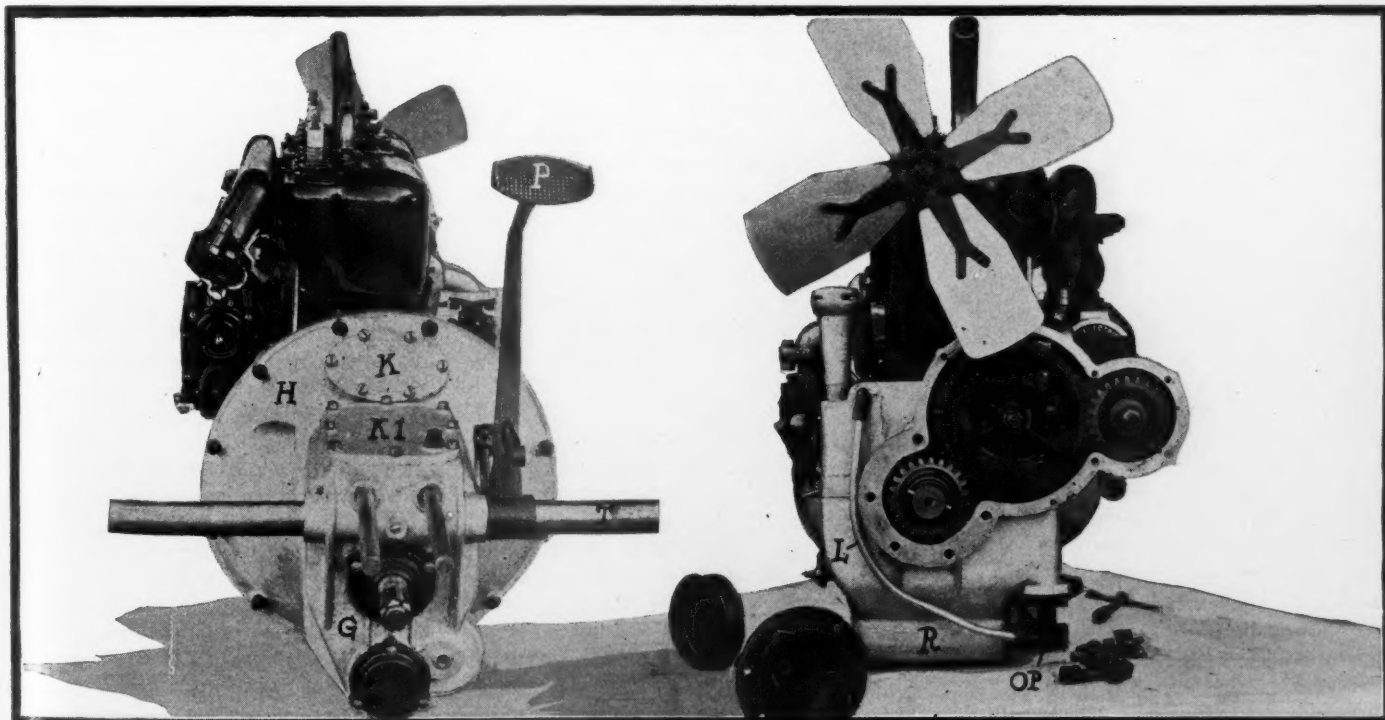
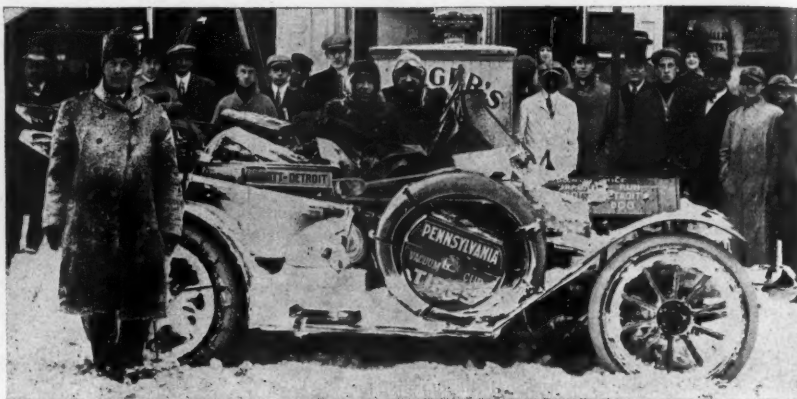


FIG. 4—REAR AND FRONT VIEWS OF HAZARD MOTOR—H CLUTCH HOUSING; K CLUTCH INSPECTION PLATE; G GEARBOX; K1 GEARBOX INSPECTION PLATE; T TUBULAR SUPPORT; R OIL RESERVOIR; OP OIL PUMP; L OIL LEAD

From the Four Winds



J. J. JONES' FORD IN WICHITA, KAS., PARADE



ABBOTT-DETROIT BULL DOG AT FREDERICK, MD., AFTER SNOW BATTLE

CHICAGO Appointments—Chairmen of the Chicago Motor Club committees for 1911 will be: Contest, C. E. Gregory; technical, F. E. Edwards; legislative, Thomas J. Hay; finance, Henry Paulman; runs and tours, J. P. Dods; membership, W. J. Zucker; house, J. P. Frisby; entertainment, F. L. Estey; ordinance, J. H. Kelly; publicity, C. G. Sinsabaugh.

Will Help on Roads—An extension of the macadamized road from Fairfax Court House, Va., to Washington, D. C., is being planned by the citizens of the counties through which the thoroughfare will run, and a mass meeting which was recently held was attended by enthusiastic residents of these counties, who subscribed \$41,000 toward the consummation of the plan, which is expected to result in a modern motor highway.

Will Help on Highway—The action of the state of Pennsylvania in improving every mile of the famous national road is being followed in Ohio, the commissioners of Clarke county being the last ones to take official recognition of the needs of the restoration of this great highway, built 75 years ago. The road through that county some 25 miles will be in perfect condition before another year. After the road is completed it will furnish one of the finest motor routes to be found anywhere.

Pittsburg's Aims—Pittsburg motorists are enthusiastic over several proposed improvements in Pennsylvania. The first is free bridges, which are likely to come January 1 or soon after as the result of an appropriation made in the recent successful bond issue of \$10,300,000; the second is the proposed vehicle tunnel through the south side hills, which will open up to motorists one of the finest stretches of residence country to be found around any city, and which will be followed immediately by the building of a boulevard 25 miles long through the tunnel land to connect the city with the splendid macadam-

ized roads which run in all directions beyond that district. The third is the extension of Atlantic avenue in the east end and its further improvement to Craig street, where it will connect with the Grant boulevard and thus form a continuous macadamized roadway to the extreme east end from downtown.

De Palma a Free Lance—Owing to the fact that the 1910 racing season has closed save for one meet, Ralph de Palma has obtained a release from his contract with the Fiat Automobile Co., which was to have expired January 1, 1911. He expects to go to Los Angeles, Cal., to drive in the 24-hour race on the board track. Next year de Palma will be a free lance.

Milwaukee Wants Quiet—An ordinance will be introduced in the Milwaukee common council at the next meeting regulating noise and abolishing unnecessary noises. The ordinance is aimed at freak motor car signals. No certain kinds of signals are mentioned and motorists seem to be at sea as to how the ordinance will be enforced should it be passed.

Utah Club's New Secretary—At a recent meeting of the directors of the Automobile Club of Utah, the resignation of James E. Jennings, secretary and treasurer, was received. Mr. Jennings felt that his absence from the city a greater part of the time made it impossible for him to give the attention needed to the office. Jay T. Harris was appointed by the directors to fill the unexpired term.

Two Climb Kickapoo Hill—A notable event in motoring annals took place in Peoria during the last week, and as a result the Kickapoo hill, long known as the worst grade in the state for motorists, has lost its terrors. In the week just past two drivers have negotiated the hill on high speed. The first to perform the feat was Monckmeur, in a Staver-Chicago, who climbed the hill on high for a wager of \$100. The levers were sealed. On Thursday of the same week S. Reents, driving a

Haynes, duplicated the performance five times, each time taking one passenger with him. The car used was a stock model, five-passenger touring car, and was geared 3½ to 1. Kickapoo hill, on the Farmington road, is very steep and rough, and there are several exceedingly difficult angles.

Shuart Speedway Publicity Man—C. E. Shuart has been appointed publicity manager of the Indianapolis motor speedway and has entered his new duties. Mr. Shuart has been assistant manager of the Buick racing team and prior to that was motor editor of the Indianapolis Star. The speedway management has decided to run the 500-mile international sweepstakes event on May 30, instead of on May 27, the date first announced.

Maryland's Tags Ready—The new Maryland motor car licenses are now in the possession of Motor Vehicle Commissioner Charles E. George and are ready for distribution. The tags have white numerals on black backgrounds. The owners will be supplied with tags from 10,000 up, while those tags numbered from 1 to 1,000 will be given to the dealers so that their cars can be more easily distinguished from the private cars.

Interested in Canadian Run—No fewer than nine different manufacturers of motor cars have written to the Modern Power Co., Winnipeg, during the past few days to express their interest in the proposed Canadian national reliability tour for 1911 which will cover a 2,300-mile route through the principal cities and towns of western Canada. Among those who have expressed their interest in the tour are the Franklin Automobile Co., Syracuse, N. Y.; Reo Motor Car Co., of Canada, Ltd., St. Catharines, Ont.; the Metzger Motor Car Co., of Detroit; Velie Motor Vehicle Co., of Moline, Ill.; J. I. Case Threshing Machine Co., of Racine, Wis.; Tudhope Motor Car Co., Orillia, Ont.; Streater Motor Car Co., Streater, Ill.; Abbot Motor Co., of Detroit,

and Pullar Phibbs, of Dublin, Ireland. Nearly all of these firms have expressed their intentions of entering one or more cars for the endurance run over the Canadian prairies.

Willimantic Club Election—At the annual meeting of the Willimantic Automobile Club, of Willimantic, Conn., the following officers were elected for the ensuing year: President, George A. Bartlett; vice-president, Walter B. Knight; secretary, Harry Cotter; treasurer, Edward J. Tryon; board of governors, above named officers and E. R. Chesbrough, E. T. Bugbee and F. L. Powell. Directors to the state association are George E. Hinman and Dr. W. L. Higgins.

Ohio's Figures—The report of the state registrar of motor cars for the fiscal year ending November 15 shows that there are about 35,000 cars in use in the Buckeye State. Licenses were issued to owners of 32,940 cars, and licenses were issued to manufacturers and dealers and demonstrators for 1,778 cars. During the years chauffeurs to the number of 5,144 were licensed and 488 duplicate tags were issued to owners who had lost their number plates. The total revenue of the department for the year was \$178,125.

Has a Country Home—The Automobile Club of Cincinnati has decided to make the Automobile Country Club, on Colerain pike, the Cincinnati Automobile Club's country clubhouse hereafter. Manager Davis, who has been conducting the clubhouse as a private enterprise, will continue as manager, but instead of the clubhouse being open to the general public hereafter only members of the Automobile Club of Cincinnati will be entitled to enjoy its hospitality. A tennis court and a large garage also will be added.

Elliott Reappointed—Frederick H. Elliott, of New York, has been reappointed chief examiner of the revised board of examiners for the examination of chauffeurs throughout the state of New York, as provided for by the Callan law. Examiner Elliott's headquarters are at Albany. He will also be in charge of the New York office of the secretary of state, where examinations of chauffeurs are conducted daily. The state is divided into nine districts, ten examiners having been appointed from the state civil service list.

Deceptive Road Signs—That road signs of a deceptive nature may be painted so real as to endanger motor travel was demonstrated recently in Rock Island, Ill., where a chauffeur from the Mason garage of Davenport, Ia., drove a new Pierce-Arrow demonstrating car through a galvanized iron sign painted in imitation of a tunnel. The fact that the sign was placed where the road turns sharply under a viaduct added to its deceptive nature. The accident has aroused considerable feeling among Tri-City motorists that state laws should be passed prohibiting the placing of deceptive road signs. The

United Breweries Co., which owned the tunnel sign, has several similar advertisements in the locality representing turns in a road, roadside views, etc.

Lytle Going Abroad—America's pioneer racing driver, Herbert Lytle, is again able to begin activities after recovering from a broken leg sustained at the Indianapolis speedway during the May races, and he will take a 2 months' trip abroad before deciding on plans for the future. Lytle will sail from New York on the Mauretania Saturday and will be accompanied by his wife. Lytle says that his broken leg is perfectly healed so that he can again pilot a car, and that he believes the coming racing season will be the greatest in the history of the sport.

Object to Blocking Traffic—An ordinance is proposed in Hartford, Conn., limiting the time which a motor car may be left standing on streets in the business section. At the present time the narrow streets in the center of the town, owing to the number of cars used and left standing at the curb, are more or less congested. The club is in favor of having a time limit determined but does not favor the 5-minute limit proposed. Many of the members say that they do not think it right or proper to allow cars to remain on the streets for any length of time and thus block traffic when they can be left at any of the garages during the day for a nominal sum.

Iowa Again in Evidence—The third river-to-river road in Iowa, which is to be known as the Hawkeye highway, and which will connect Dubuque and Sioux City through the northern counties of the state, was put well under way at a meeting in Waterloo last week. Nearly all the towns along the proposed route were represented and every one of the fourteen counties through which the road will pass had delegates. Dr. F. D. Seaman was made president of the road association, W. W. Parrott, Waterloo, secretary and treasurer, and C. A. Peasley, vice-president. A tour across the road from Dubuque to

Sioux City followed by a boosters' convention in Sioux City are the first events planned for the road in the spring by officers of the association.

Ready for Signboarding—As soon as the snow melts the members of the Automobile Club of Maryland will begin the work of posting signs between Baltimore and Annapolis. These signs already are in the possession of the club, ready for posting when the weather permits. The club also will carry a stock of fifty signs marked "Baltimore," making it possible to complete those signs and distribute them at very short notice.

Set a High Standard—The making of Minnesota the premier state for highways, a place to which tourists from all parts of the country will flock in large numbers and Olivia, the Mecca of good-roads seekers, is the ambition of Renville county citizens, who were formally presented with the most expensive trophy ever awarded for road improvement work, last Saturday. This was the prize presented by the Automobile Club of Minneapolis, the dealers and newspapers, and captured by the county when the Tribune tour passed through it on its return from Aberdeen to Minneapolis in October. Fully 400 citizens attended the celebration, which was held in the armory, and the residents of the county are deeply gratified at receiving the prize.

Troubles of Pathfinders—After being practically lost in the mountains 25 miles south of Tusculumbia, Ala., for 20 hours and later battling with the worst storm that section of Alabama has experienced this winter, the four motorists who left New York on November 22 in the pathfinding Ohio car for San Francisco, reached Tusculumbia late at night December 5, thoroughly exhausted. The journey between Courtland and Tusculumbia was over a road covered by 2 feet of water for miles, and most of the way the wheel hubs and foot-board of the Ohio car were under water. The heavy rain prevented communication between the towns.



MAXWELL CAR THAT WON PRIZE IN PARADE AT GOLDEN, ILL.

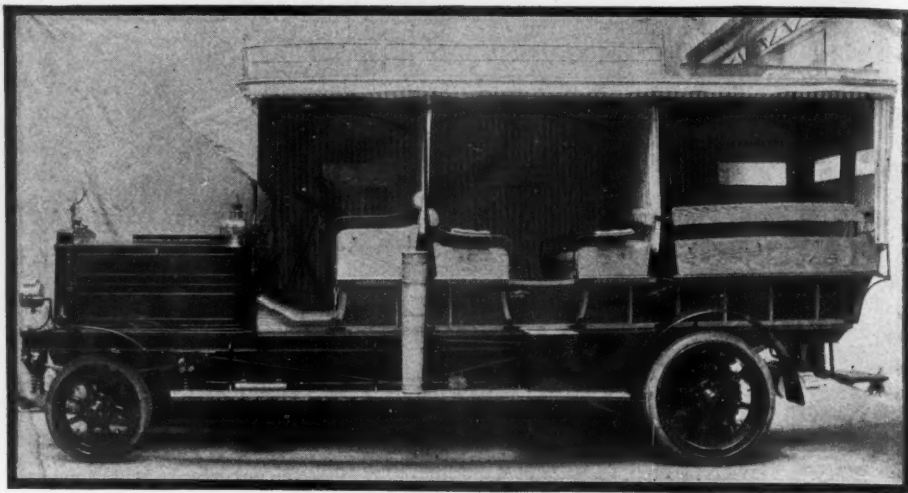
TRUCK SITUATION IN BOSTON

THE commercial situation in Boston has assumed somewhat of a peculiar phase during the week. The Boston Motor Truck Association was formed a few weeks ago with J. W. Maguire, of the Pierce-Arrow, as president temporarily. Later on some of the other truck dealers who were not at the meeting got together and decided to form another organization. It was their contention that the men identified with the Boston Motor Truck Association were not thoroughly representative of the commercial field, as some of them never had handled trucks, although their firms were planning to build some this season. So December 6 there was another meeting of the second aggregation, at which Chester I. Campbell, secretary of the Boston Automobile Dealers' Association, and manager of the motor shows, was a guest. Invitations had been sent out to a number of the Boston dealers, asking that they attend the meeting, but for some reason or other many of these were recalled.

At the meeting Mr. Campbell urged the men to postpone action on the matter until later so as to give some of the men now outside the pale a chance to get in at the inception of the organization. This was voted down, however. It then was voted to incorporate an organization to be known as the Commercial Motor Vehicle Association. A rule was adopted reading that to be eligible a dealer had to have a motor vehicle either for show or demonstration, or that he must have sold and delivered within 6 months to some merchant a motor vehicle. This, of course, shuts out for the present the men whose firms are making trucks, but which will not have them ready for demonstration in Boston until after the New York show, or possibly not until the Boston show.

Another problem being considered is a commercial truck show separate, of course, from the Boston motor show. Some of the men identified with the Commercial Motor Vehicle Association want to have a show. Others in it do not. The Boston Motor Truck Association men being all affiliated with the Boston Automobile Dealers' Association, will not have any truck

In the Realm of the



FOURTEEN-PASSENGER HUNTING BUS IN USE IN AUSTRIA

show, as they have space in the Boston show.

It is expected that when the entire situation is canvassed that the greater number will be found opposed to any show unless it may be some sort of an open air one in the summer or a tour of some of the nearby cities covering a week. The Commercial Motor Vehicle Association elected the following officers at its meeting: L. B. Butler, Rapid, president; G. P. Dennett, Frayer-Miller, vice-president; Day Baker, General Vehicle, secretary; A. B. Cumner, Autocar, treasurer; C. A. Blackmer, Gramm; E. P. Blake, McIntyre, and F. S. Corlew, Wilcox, directors.

On Friday the Boston Motor Truck Association held a meeting and it was announced that seven new members had been brought in. From the names of those attending the meetings it appears as if some of the makes are represented in both associations. That there may be an amalgamation of some sort later seems probable, because it is understood that the officers of the Commercial Motor Vehicle Association are to hold office only until

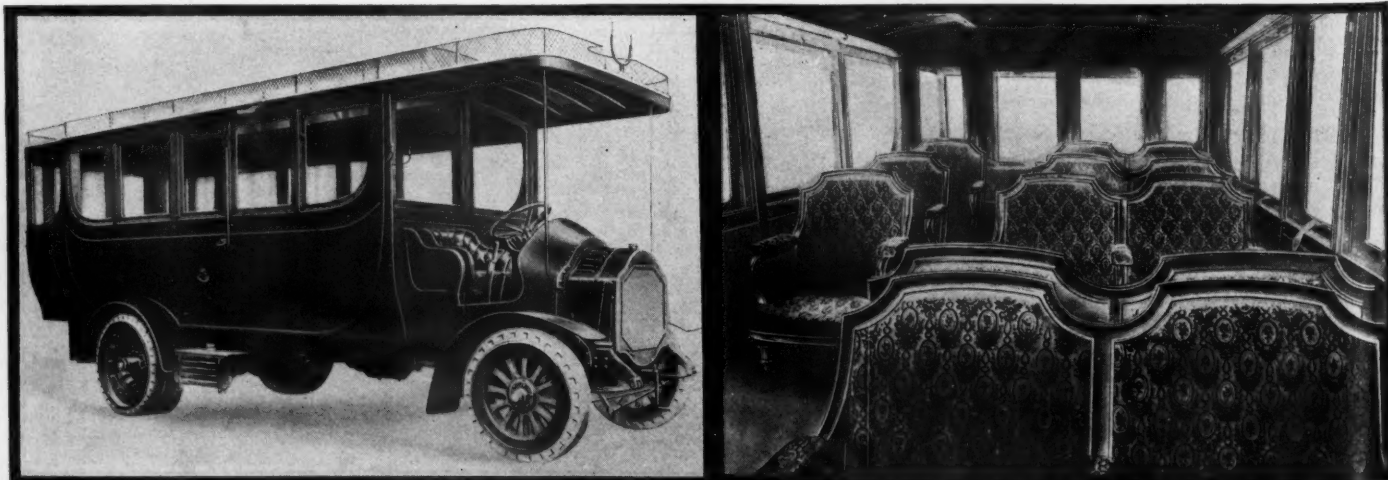
April. By that time perhaps there will be some of the members of the other association eligible under the rule adopted to cover membership and a new meeting and election of officers will see a more representative organization formed.

USES SALOON MOTOR BUS

The International Motor Car Touring Co. has for some time carried on a special service of daily excursions, partly from Paris to Versailles and partly from Paris to Fontainebleau. In order to afford the greatest possible comfort to the patrons of these trips the company has made of its motor buses real saloons. The chassis is a 35-horsepower de Dion-Bouton chassis, of the same type as used in connection with other motor buses of the same constructors.

HUNTING MOTOR CAR

A hunting motor car has been constructed. A. Foss, of Vienna, the Austrian representatives of the Bussing firm, the body having been supplied by Jacob Lohner & Co. The vehicle is a motor break containing a separate compartment



EXTERIOR AND INTERIOR VIEWS OF DE DION SALOON MOTOR BUSES USED FROM PARIS TO VERSAILLES

Commercial Car



KISSELKAR 3-TON TRUCK CARRYING 14,300 POUNDS

for six sportsmen and one for six hunters, space for the driver and valet, a rifle-stand for twelve rifles, storage room for 4,000 cartridges, the hunting breakfast, camp-stools, luggage, knapsacks, a stick basket, etc., and accommodation for the hounds.

Being intended for use in the provinces, where any repairs and revarnishing would be difficult, the body has been made of plain wood—ash, inlaid with nutwood. Linen curtains with celluloid windows can be put up on all sides to protect the occupants in bad weather or to allow the sportsmen's compartment, if required, to be locked entirely to the front and back when forward and backward speaking tubes will afford a ready communication with the driver, valet and hunters.

All the seats are coated with pigskin. The radiator is surmounted by a stag's horn with sixteen antlers, finished in bronze; the latches of the doors are formed by running foxes, likewise of bronze. In order to eliminate any disturbing metallic

luster and to facilitate the upkeep, all the rods generally made of brass or brass-plated are coated with brown paint. In fact, the practical utility of the vehicle has always been the first point taken into account. On and below the footboard there is room for locating any utensils and supplies for the driver's use, in addition to a large assortment of all kinds of tools, a roof ladder being used also in climbing up with the game, etc.

A valuable feature is that the vehicle can be operated also with heavy benzine, which not only is more readily obtainable at some places but is cheaper exactly by one-half.

TRUCK TO THE RESCUE

The lifeboat of the airship America, in which Wellman and his party of six attempted to cross the Atlantic was loaned to the Barnard, Sumner & Putnam Co., of Worcester, Mass., for exhibition and was promised to R. H. White & Co., of Boston, for last week as an attraction to the

Christmas shoppers. The problem of moving this lifeboat, which is 27 feet long and 6 feet wide, from Worcester to Boston between closing time Saturday night and opening time Monday morning presented itself. The only way of moving it appeared to be to ship it by freight with all the attendant delays and troubles at the Worcester and Boston ends in loading and unloading. C. H. Martin, sales manager of the R. L. Morgan Co., learning of the predicament, offered to loan a 5-ton Morgan truck in which the run to Boston was made in 4½ hours.

KISSEL CARRIES BIG LOAD

Recently a Kisselkar, 3-ton truck, was requested for demonstration by a Chicago commission house and was backed up to the freight house and loaded with ninety-three sacks of potatoes. F. H. Morse, designer of the car, was not aware of the fact that it was loaded to such an extent, but when the weight was taken the load was shown to contain 14,300 pounds—13,800 pounds to which must be added the weight of three men, making a total load of over 7 tons.

FREIGHT LINE ORGANIZED

The Boston and Suburban Electric Transfer Co. has been organized in Boston for the purpose of delivering express and freight between Boston and suburban communities. Frank D. Stranahan is president, George E. Coats secretary and William E. Eldredge treasurer. The company proposes to use Couple-Gear electric trucks with trailers, and it is claimed that it can do the work cheaper than it can be done by railroads, trolley lines or horses. The initial line is to be operated between Boston and Lynn. Other routes projected are to include Malden, Medford, Charlestown, Chelsea, Cambridge, Arlington, Waltham, Watertown, Newton, Brookline, Roslindale, Hyde Park, Quincy and Wollaston. The trucks with trailers will be able to carry up to 15 tons at a load. Goods will be picked up at the door of the shipper and set down at the door of the purchaser.



MORGAN TRUCK CARRIES AMERICA'S LIFEBOAT FROM WORCESTER TO BOSTON

The Motor Car Repair Shop

FEW there are who really know the mysteries of gasoline. Most drivers look upon the fluid as something which provides the power that drives their cars; a fluid which is used for cleaning in cleaning establishments and which is used in making and mixing paints. Even the supposedly wise ones sometimes fail to qualify as experts when it comes to answering the question: What is gasoline?

Gasoline, an arbitrary name first given to certain gravities of naphtha used for making illuminating gas in house-plants, is a colorless, inflammable fluid, one of the first distillants of crude petroleum. Crude petroleum, rock oil, mineral oil, or natural oil as it is sometimes called, is a dark brown or greenish inflammable liquid, which, at certain points, exists in the upper strata of the earth, from whence it is pumped, or forced by pressure of the gas attending it. It consists of a complex mixture of various hydrocarbons, is refined by distillation, and the chief products include gasoline, naphtha, benzine, kerosene, lubricating oil and paraffin.

Except for a couple of hydrocarbons, which are gaseous at ordinary temperatures, gasoline is the most volatile of the products of crude petroleum and consequently is the first to come off in the process of distillation. Distillation is an operation by which a volatile liquid may be separated from a substance which it holds in solution or by which liquids of different volatilities may be separated. The operation depends on the transformation of liquids into vapor by the action of heat, and on the condensation of this vapor by cooling. In the manufacturing laboratory, specifically, all gasoline is naphtha.

When a quantity of crude petroleum is put into a still and a certain heat applied, say from 160 to 195 degrees Fahrenheit, a certain portion of the petroleum will evaporate, pass through the condensing coils of the still, where it will be cooled and again liquefied, and then pass out into the receptacle designed to receive it. This portion which comes off at from 160 to 195 degrees Fahrenheit, about 1.5 per cent, as shown in the illustration, Fig. 1, will test from .66 to .67 specific gravity, which is equivalent to from 80 to 78 degrees on the Beaume scale. This is real gasoline, not that which is generally used in the motor car, but the genuine article. It is extremely volatile and, if obtainable, there would be little or none of the trouble which is now experienced in starting a motor car engine after it has been standing in the cold for several hours. To obtain the 10 per cent of naphtha C contained in this quantity of crude petroleum it is but necessary to increase the heat

Gasoline—Its Make Up

around the boiler of the still to from 195 to 230 degrees Fahrenheit, and the product that will come off at these temperatures will have a specific gravity of from .68 to .70, or 75 to 68 degrees Beaume. Thus, by simply raising the heat of the still the heavier fractions in a like manner are separated from that which is left of the original product, until, at last, nothing remains but the residuum. The distillates so obtained are usually purified by treatment successively with sulphuric acid and solution of caustic soda, followed by washing in water. The stills or retorts may be of any shape or size; both are immaterial and practice is different. They may be cylinders placed horizontally and in banks, or cylindrical or conical standing perpendicular and having curved domes.

Rectification is effected by a copper coil many feet in length inside the retort and passing through the crude petroleum carrying steam at a high pressure, assisted by a gentle direct fire varying from 122 to 257 degrees Fahrenheit. Each retort has an inlet pipe for the crude petroleum and an outlet pipe for the distillant. The outlet pipe passes over the side and down to a cooling coil or worm immersed in cold running water. This worm acts as a condenser that changes back to liquid form the vapors driven off the petroleum

by the heat. A smaller pipe leads from the condenser to the receiver, having glass sides, through which the still-man can watch the flow of distilled oil. From the bottom of the receiver a number of pipes lead to different storage tanks, each pipe having a cutoff valve to regulate the flow of the varying gravities to their proper tanks, each cutoff being a sweeping.

The first product from the retort is a gas formed by the mingling of the fumes of the petroleum with a small volume of air left in the reservoir. This is sometimes conveyed to the firebox and used as fuel. When the first flow of the distillant reaches the receiver the still-man tests it with a Beaume hydrometer for its density. Usually this first flow is found to be about 90. It is of a highly volatile nature, so nearly a gas that when exposed to air it rises in an invisible vapor and will quickly evaporate. It cannot be confined for any length of time in barrels, even if they have been successively coated inside with wax and repeatedly painted outside to make them air-tight. Even in the coldest weather it will pass through the wood. For these reasons this gravity is not put out commercially, but is used to bring up the gravity of a mass made of heavier fractions; that is to say, if 88 Beaume gasoline or naphtha is being tanked the stillman lets all the 90, 89, 88 and enough of the 87 oil flow into the receiver to make an average mixture.

The oil is repeatedly tested with the hydrometer until the right gravity has been produced in the receiver, when it is let off to the proper storage tank. In the same way if 82 is the next grade wanted, all the gravities from 86 down to perhaps 78 are commingled in the receiver until a uniform fluid of the required gravity is obtained to let off into its tank. This process is called fractioning, and is continued through gasoline into kerosene, the next distillant, down to about 32.

As the market for gasoline, such as is used in motor cars and gasoline motors in general, is perhaps as great if not greater than all the other products of crude petroleum, it has been necessary for the oil manufacturers to convert as great a portion of it into a suitable grade of gasoline as possible. The ordinary grade of gasoline therefore tests about 62 or 64 degrees Beaume at a temperature of 60 degrees Fahrenheit. It must be remembered that with every fall of 10 degrees in the temperature of gasoline there will be a drop of 1 degree on the Beaume scale. Thus it will be seen that the gasoline now in general use and testing around 62 degrees Beaume is in reality a blend of the highest grades of gasoline, the naphthas C, B and A and much of the kerosene.

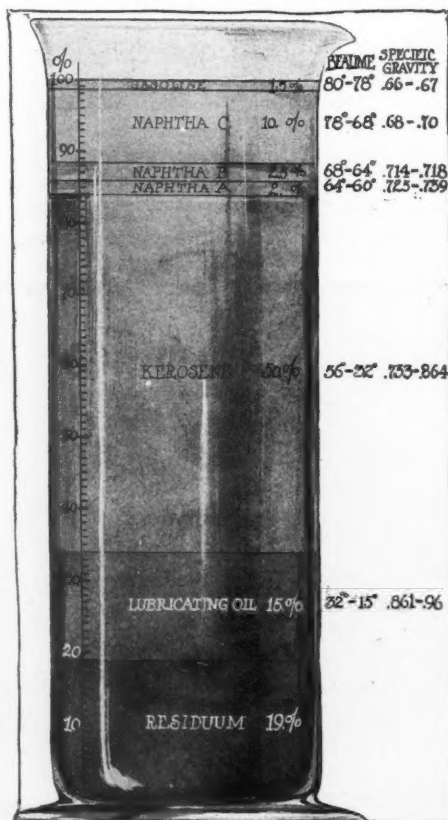
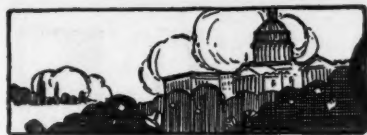


FIG. 1—THE MAKEUP OF PETROLEUM



Current Motor Car Patents

DOUBLE-PISTON Slide-Valve Engine—

No. 977,334, dated November 29; to John Edward Sears, Jr., Newcastle-upon-Tyne, England.—This patent relates to a multi-cylinder engine having two pistons in each cylinder and sliding sleeve valves. The arrangement is illustrated in Fig. 4. There are two crankshafts C and C1, two working cylinders A and B which are provided with inlet and exhaust ports on opposite sides, cylindrical valve sleeves S having slots or ports and which operate between the cylinder walls and the pistons, the two oppositely-disposed pistons P and P1 in each cylinder, connecting rods R and R1 communicating between them and their respective crankshafts, connecting rods D attaching the sleeves S to the overhead crankshaft C1, and suitable gearing between the two crankshafts.

New Valve-Removing Tool—No. 977,245, dated November 29; to Peter C. Wiest, York, Pa.—The device to which this patent relates is a tool designed to compress the valve spring of an internal combustion motor to facilitate the removal of the valve. It is illustrated in Fig. 3, and comprises a threaded stem S forming a fulcrum block support, a fulcrum block B having threaded and rotatable connection with the stem S, and a valve spring-compressing lever L with a forked end, the arms of which form an open slot to receive the stem M of the valve. The arms of the forked end of the lever L are provided with a plurality of sets of fulcrum points spaced apart along the length of the slot for adjustable engagement with

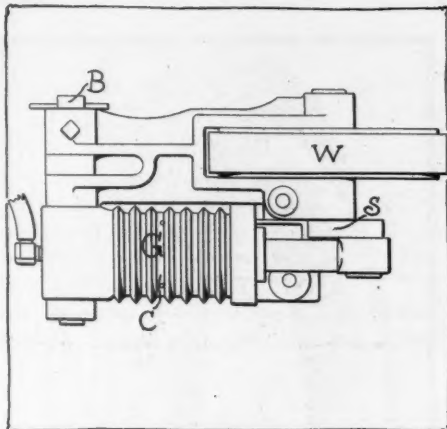


FIG. 1—TIRE-INFLATING PUMP

the fulcrum block B. The advantages of this type of valve-spring compressor are the simplicity and compactness of its design, its adaptability to any motor construction, and the ease and security with which it may be operated.

Force-Feed Carburetor—No. 976,881, dated November 29; to Barry Ivor, Chicago, Ill.—The carburetor covered by this patent is floatless and it does two things which the ordinary carburetor does not do. It forces fuel directly into the mixing chamber instead of letting it be drawn in by the suction of the motor, and it is capable of drawing fuel from a supply tank situated below the level of the carburetor without the aid of pressure in the supply tank. As illustrated in Fig. 2, it consists of a main casing C having a mixing chamber M at one end thereof,

means at the other end to admit air thereto, a reservoir R within the casing, a pump within the reservoir having a valve-controlled discharge port or spraying nozzle Z, a valve-controlled by-pass communicating at its upper end with the discharge port and at its lower end B with the upper portion of the reservoir, and also having a valve-controlled inlet I to the pump cylinder. A valve V actuated by the spring S is movably mounted on the pump cylinder and connected to the plunger P of the pump, and it is provided to open and close one end of the main casing. The main air inlet ports to the carburetor are shown at E; gasoline is admitted at G and the amount admitted at this point is controlled by the adjustable valve T; the fuel forced out of the spraying nozzle Z is regulated by means of another needle valve N, and the fuel mixture which passes out of the carburetor at X, is controlled by the valve L.

Flywheel Tire-Inflating Pump—No. 975,774, dated November 15; to Charles Lewis, Auburn, N. Y.—The tire-inflating pump covered by this patent is designed for attachment to the chassis of a motor car so as to be driven by a friction wheel from the flywheel of a motor. It is comprised of a mainframe and a secondary frame, the latter carrying the actuating wheel W and the crankshaft S. The secondary frame and the cylinder C of the pump is secured to the mainframe by a single bolt B; so that by its removal the pump cylinder, piston and crankshaft can be disassembled from the mainframe.

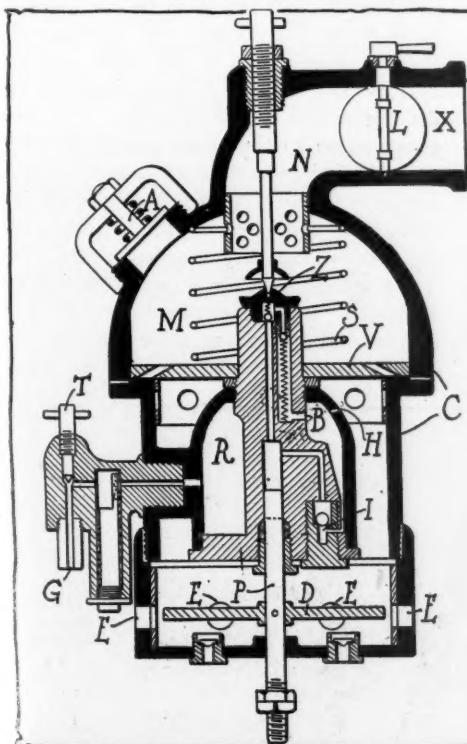


FIG. 2—IVOR'S FORCE-FEED CARBURETER

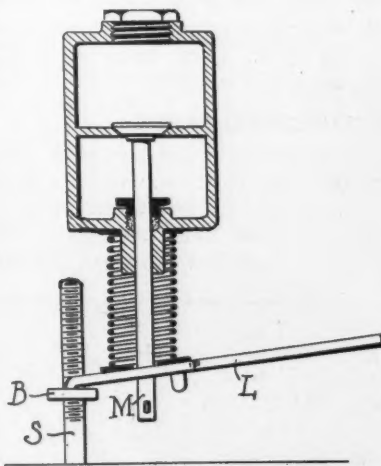


FIG. 3—VALVE-REMOVING TOOL

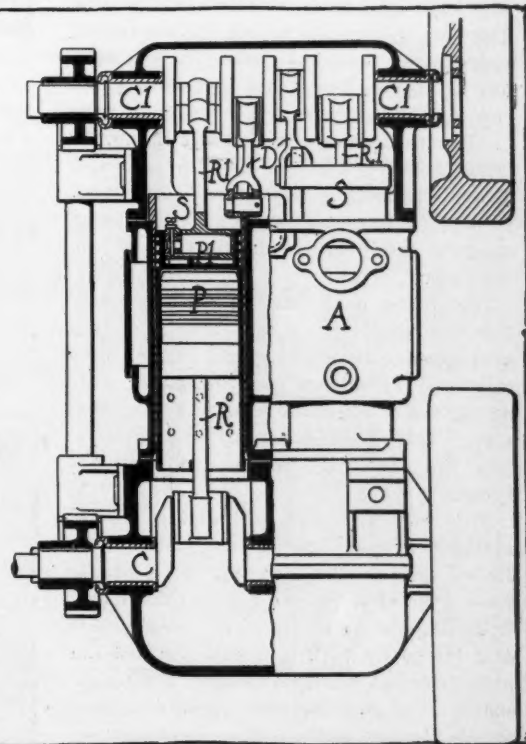


FIG. 4—DOUBLE-PISTON SLIDE-VALVE ENGINE



Development Briefs



DAVIS BALL-BEARING MOTOR

THE Davis Mfg. Co., Milwaukee, Wis., is manufacturing a two-cylinder opposed ball-bearing motor, Fig. 5, for use in trucks. It is made with cylinders having 5½-inch bore and 5-inch stroke. As the illustration shows, the motor is conventional in many respects, but has a few details which are especially important in conjunction with truck work. One of these is a governor mounted in the cylindrical compartment G at the front of the motor. This governor operates a butterfly valve located in the intake manifold M from the carburetor. As will be noted, this manifold M is cast integrally with the governor housing G in order to give rigidity and also formed integrally is a short vertical tube T, within which is the rod connecting from the lever of the governor to the butterfly valve in the intake manifold. The object of this governor is to prevent racing of the motor, which is such a common offense in commercial uses. In order to prevent tampering with the governor the company has taken the precaution of drilling the screws immediately below where the intake manifold connects with the pipe M and putting a wire through them on the end of the governor and also on the flange and sealing same with a lead seal, a detail which renders tampering with the governor impossible.

A detail of importance in conjunction with this motor is the ball-bearing crankshaft, Fig. 2, which is carried on the two ball races B, No. 413 in size. The crankpins P, to which the connecting rods attach, are 2½ inches in diameter and 3 inches long, each connecting rod cap is held in place by four ⅝-inch bolts C. Bronze bushing with babbitt lining, the latter sweated and soldered in, are used. These connecting rods are cast steel, formed in box section, this design being used to assist in the lubrication of the wristpin.

Not to be overlooked in this motor is the incorporating in the base an oiling arrangement in which gear pumps force a stream of oil on the connecting rods at all times when the motor is in operation. This gives an internal oiling system the same as used on four-cylinder types.

This company also is building a two-cylinder opposed motor for 1-ton trucks. It has cylinders 5¼ by 4¼. It is of the same general design as the one described, excepting that one-half of the crankcase is cast integrally with each cylinder and the plain bearings are used to carry the crankshaft. It is provided with a governor used on the larger motor. The crankshaft is 2 inches in diameter. In addition to this motor the company has a four-cylinder

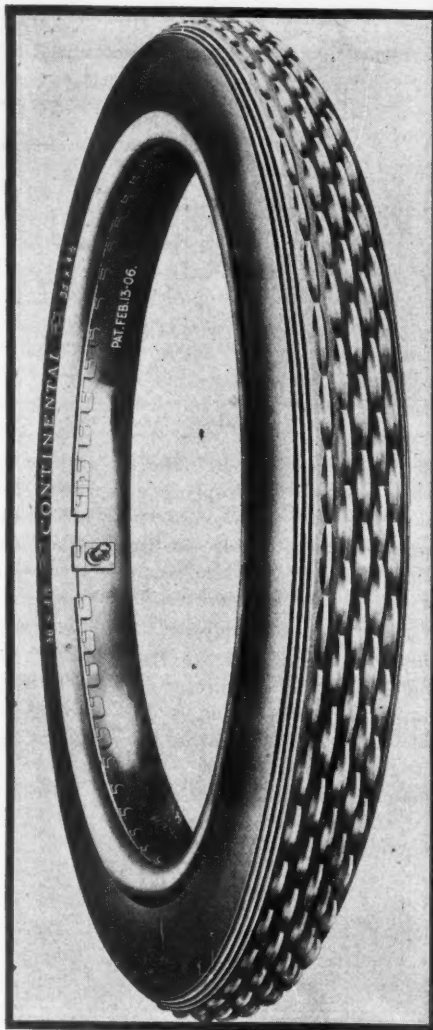


FIG. 1—CONTINENTAL TRAXION TREAD

opposed type, with cylinders 6½ by 6 and a still larger four-cylinder type, with cylinders 8½ by 8. These larger sizes may be used for street car service.

F. B CLUTCH-RELEASER

The F. B. automatic clutch-releaser, manufactured by the F. B. Co., Columbia, S. C., is a turn-buckle rod device for interlocking the high-speed clutch and the service brake of the high and low-speed clutches

on Buick model 10 cars. Equipped with these clutch-releasers, the car is driven at all times under foot control. A slight pressure on the brake pedal throws out the clutch and when the pressure is released the high re-engages. Extreme pressure on the brake pedal stops the car just the same as if there were no releaser in use. In the case of a heavy pull or where low speed is desired, a simple pressure on the low-speed pedal disengages the high and then engages the low, so that coming from low back to high all that is necessary is to release the pressure on the pedal. The releaser never pulls the high-speed clutch out to the point where it locks as does the regular equipment of a car, so that when the high is locked out by hand and the clutch releasers are in use the brake, or low-speed clutch, may be used independently.

STEARNS REAR AXLE

With the transition from chain to shaft-drive has come the big problem of a satisfactory rear axle construction. With many concerns the rear axle has been a bugbear. One of the difficulties has been the construction of a case or housing sufficiently rigid to carry the differential and driveshafts without sagging under the car load. When a rear axle sags the meshing of the driving pinion with the bevel gear on the differential is interfered with and noise results. Within the last 3 years two features of construction have exhibited themselves in the rear axle field. One of these is the use of a special housing formed in one piece. In forming the load-carrying part of the axle another feature has been the supporting of the driving pinion and differential in a unit construction so that their proper relationship is more certain.

The F. B. Stearns Co. was among the earliest to bring out a special axle housing. Its details are shown in Fig. 4, in which the five stages of manufacture are exhibited. To begin with this axle is a slab of alloy steel, as shown at 1. The second stage in its manufacture is putting

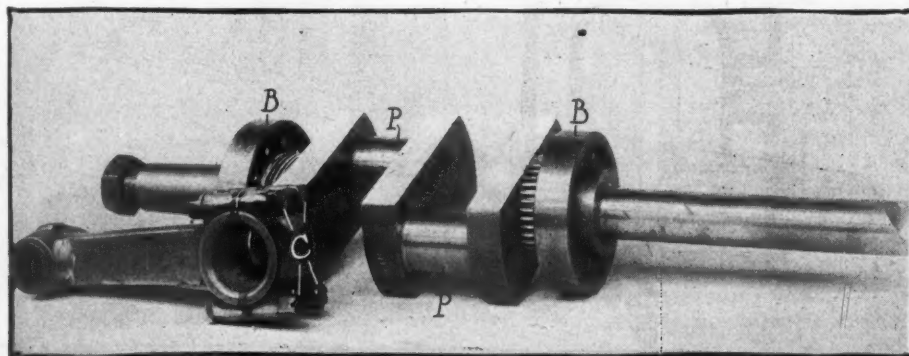


FIG. 2—BALL-BEARING CRANKSHAFT ON DAVIS MOTOR

this in the die and having two enlargements A and B formed with a connecting neck C between them. This process results in the lengthening of the entire piece, leaving the end portions E of the same section as in 1. At 3 is shown the third stage in which the enlargements A and B as well as the connecting neck C are divided into halves and separated as ACB, leaving an oval space between them in which the differential is nested or carried. In part 4 of this figure the central arms are given a more diamond-shaped formation, and the end pieces E are lengthened and converted into round or cylindrical sections. In part 5 the end parts E1 are turned to size and a hole drilled from end to end to each through which hole the axle driveshafts, as indicated at AS, pass. The road wheels are carried on this axle at approximately the position W. The merits of an axle of this nature are many, but the paramount aim is that being a solid forging from end to end the construction is practically as strong as in the axle of a chain-driven car.

GRAEF-ARTHUR STEERING GEAR

The Cross Gear and Engine Co., Detroit, Mich., is manufacturing the Graef-Arthur steering gears intended for light and heavy pleasure cars, one for cars up to 2,000 pounds in weight and a larger size for cars up to 4,000 pounds. Special sizes are built for trucks, according to requirements. Fig. 3, a vertical section of the steering gear, shows its general construction, consisting of a worm W secured to the tube K on the top of which is carried the steering wheel. Working on this worm is a long metal nut

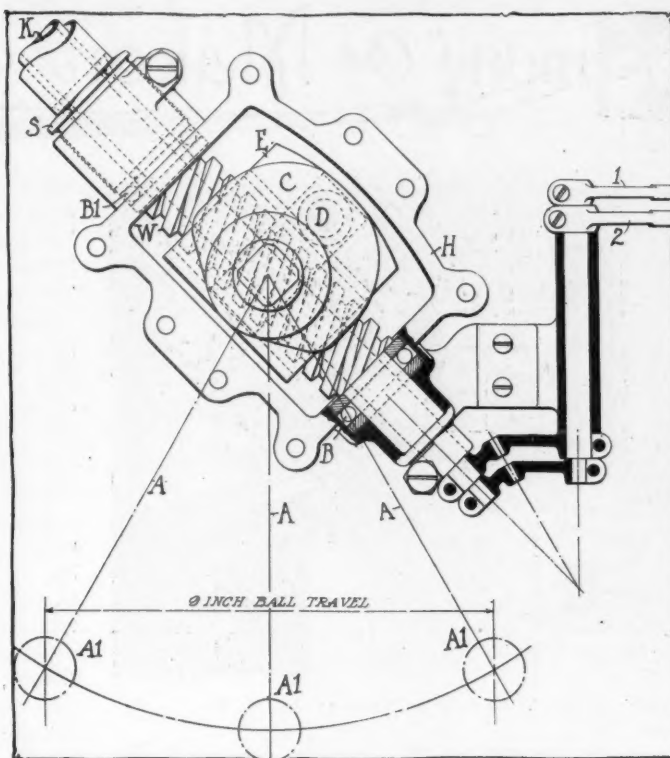


FIG. 3—GRAEF-ARTHUR WORM-AND-NUT STEERING GEAR

E. A lever C is pivoted at the point D on this nut, and in this lever is carried the arm to the squared end of which the radius arm A—only indicated—is carried. On the lower end of the radius arm is a ball ending A1.

The operation of this gear is as follows: When the worm W is turned the nut E is raised or lowered according to the direction of movement. Raising or lowering the nut results in raising or lowering the pivot bolt D and the raising or lowering of this bolt imparts a part rotation of the shaft and the consequent movement of the radius arm A. There is a maximum travel of 9 inches at the end of the ball arm. Above and below the worm W is a ball

thrust bearing. Large wearing surfaces are employed throughout in this steering gear and all moving parts are enclosed and operate in an oil bath. The housing H is so parted and jointed as not to diminish the strength of the metal. All parts used in the gear are made of machine steel and steel forgings except the housing, its cover and supporting brackets.

TRAXION TREAD

The Continental Caoutchouc Co., New York, is marketing its Traxion tread non-skid tire, illustrated in Fig. 1, which is made in either clincher or quick detachable types, the latter being a non-extensible bead so that lugs are not necessary. The anti-skid feature of this tire consists of five staggered rows of oval elevations on the tread. These elevations are approximately twice in circumferential length what they are in width, so that the danger of tearing them from the tire proper, with

which they are a corporate part, is eliminated. The long circumferential length has merit in its tendency to prevent the slipping sidewise, which is also one of the paramount features of a non-skid tire for road use.

This company has adopted a novel method of demonstrating its inner tubes. A 7 by 10 cardboard is employed. Forming a border on this cardboard is an illustration of an inner tube and secured to the cardboard is a piece of rubber $\frac{1}{4}$ inch wide and $2\frac{1}{2}$ inches long cut from the body of one of these tubes. This sample is attached by thread to the cardboard and is intended to demonstrate the stock used.

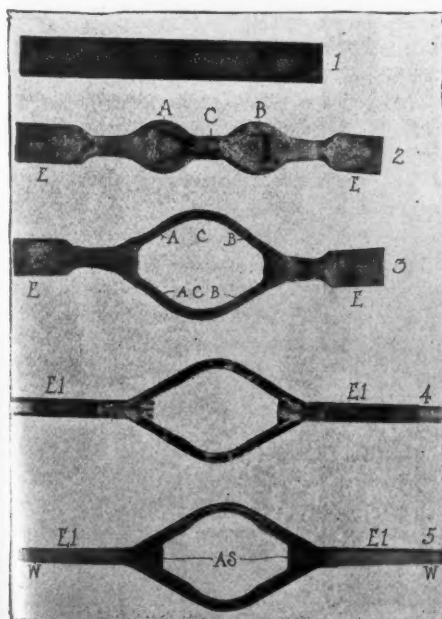


FIG. 4—STEARNS REAR AXLE

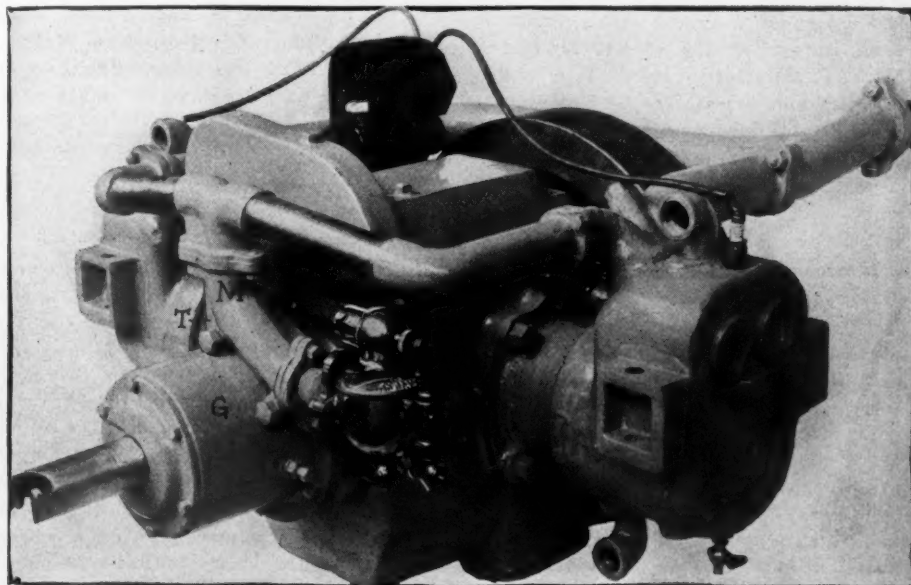
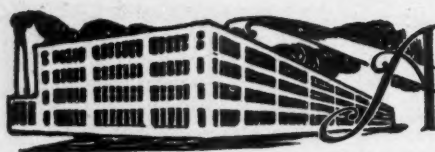
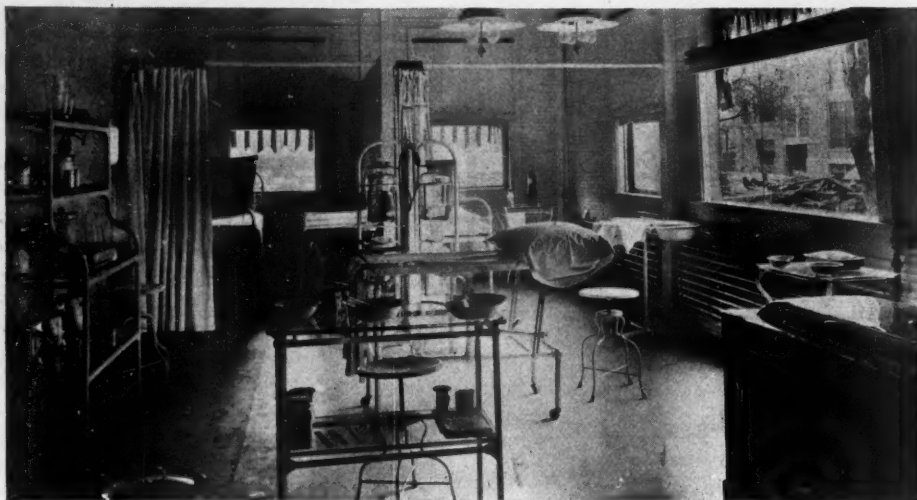


FIG. 5—BEAVER BALL-BEARING MOTOR WITH GOVERNOR INSIDE OF CASE G TO REGULATE THE SPEED OF THE ENGINE



Among the Makers and Dealers



HOSPITAL MAINTAINED AT THE DIAMOND RUBBER CO.'S PLANT AT AKRON, O.

KNOX Adopts Connecticuts—As a result of comparative tests the Knox Automobile Co., of Springfield, Mass., has adopted Connecticut shock absorbers as regular equipment on all 1911 cars.

Simms Back from Europe—Frederick R. Simms, president of the Simms Magneto Co., has returned from Europe. He now is actively engaged in the organization of the new works at Bloomfield, N. Y.

Rands Not in United Manufacturers—The Rands Mfg Co., Detroit, Mich., maker of tops, etc., has announced that it is not connected with the United Manufacturers. It has been known for some time that negotiations were on to include Rands, but these are now disputed.

New Rapid Model—The Rapid Motor Vehicle Co. has begun the construction of a new truck. A demonstrator, which is the design of Engineer F. C. Frank, has been in use on the streets in Pontiac, Mich., in satisfactory tests. It is of 2-ton capacity and has the engine under a hood on the front of the car instead of under it. The engine is of the four-cylinder type. It is planned to ultimately discontinue the manufacture of the old two-cylinder truck.

Diamond Company Hospital—While the Diamond Rubber Co., of Akron, O., has been erecting addition after addition to accommodate its rapidly increasing business, it has not lost sight of the needs of its employees, who may happen to meet with accidents while at work. Located near the center of the plant, convenient to every part of the huge assemblage of buildings, is a hospital fully equipped with modern and up-to-date apparatus for the treatment of every kind of accident. Miss Schnell, a graduate of the Akron city hospital, is present at all times. No matter how serious or small the accident, it is

treated at the Diamond company's hospital. If a finger is cut steps are taken to prevent infection of the injured member, and there has not been a case of infection since the opening of the hospital.

Making Gleasons Again—After being shut down for 2 weeks for inventory and repairs, the builders of the Gleason commercial cars have opened up again with full force at Kansas City, Mo. The present time the company claims to have more than doubled the orders on its books it had a year ago.

Durant May Move—While no definite announcement as yet has been made to that effect, it is understood that Vice-President W. C. Durant, of the General Motors Co., is arranging to spend most of his time after December 20 in Detroit. There has been some speculation relative to the removal of the headquarters of the General Motors Co. from New York to Detroit, but advices from reliable sources are to the effect that while branch offices will be established in Detroit, the headquarters will remain in New York city.

Owners Co-operate.—The Owners' Garage Co. of Cleveland has originated a plan that may serve as a model for other cities. The company has started work on a large garage on East Thirteenth street which will accommodate the cars of stockholders only. The company is incorporated with forty stockholders. A lease of 99 years has been on the property, and about \$12,000 will be expended upon the building. The structure will provide every convenience for the storage and care of the machines. A caretaker will be hired and eventually a machine shop in charge of a competent mechanic will be added. The directors and officers of the company are: Otto Miller, president; Frank C. Newcomer, vice-president; A. R. Horr,

treasurer; S. C. Cutler, secretary; Gardner Abbott, H. H. Hill, Frank H. Ginn. The building, two stories in height and of brick, covers the entire lot. It is expected it will be ready for use January 1.

Opens in New York—Formal opening of the new premises of the United Motor New York Co. at 7 West Sixty-first street, in the building of the United States Motor Co., took place recently. The new sales-rooms are artistically decorated. K. C. Pardee is manager of the company.

Another Locomobile Branch—The Locomobile Co. of America announces the opening of a branch house in Washington, D. C., located at 1124 Connecticut avenue, where the company will maintain a show-room, garage and repair shop. J. E. MacDonald, of Philadelphia, will be in charge, and the new branch will be controlled through the Philadelphia house.

Nance Making a Six—A new six-cylinder model with long stroke and large-valve motor is being manufactured at Twelfth and Vine streets, in Philadelphia, by the Nance Motor Car Co. The Nance six is made in a runabout and five-passenger touring car model. Both of the models are of the fore-door type, the bodies being low-hung and the steering column given considerable rake. The six-cylinder motor constitutes a unit power plant mounted on a three-point suspension. The cylinders are 3½ by 4-1-16, and the valves are in the head. The wheelbase is 122 inches and wheels 34 inches.

New Canadian Industry—Plans have almost been completed for the erection at St. Johns, Que., of a plant to manufacture the Baro car, which has been long on the American market. The company's directors are all Montreal men. It is proposed to ask the municipality of St. Johns to grant the company a bonus of \$20,000, payable in ten yearly installments of \$2,000 each. In addition to this the promoters of the company want from the town the present fair grounds with the buildings upon them, which consists of about 3 acres. Besides all this, the concern is to be given exemption from taxation and a free supply of water. It promises to pay in wages at least \$40,000 yearly and to deposit \$5,000 with the city as evidence of good faith. The Garo Motor Car Co., it is stated, will issue stock to the value of \$300,000, of which \$200,000 will be common stock and \$100,000 preferred. The different parts will be imported from the United States and assembled at the factory. The initial output, it is expected, will number 250 cars. To start off between fifty and sixty skilled workmen will be employed. All the cars manufactured will be equipped with 30-35-horsepower

engines. The officials of the company are: Julien Therien, president; Theophile Trudeau, vice-president; A. Vinet, secretary-treasurer; Frank Gareau, general factory manager; Charles A. Gareau, general manager.

Building Radiator Plant—Plans have been prepared for the erection of a large radiator plant to be built by the Clow Co., of Coshocton, at Coshocton, O. The work of construction will be started in the spring.

Kelsey Plant Located—The C. W. Kelsey Mfg. Co. of Hartford, Conn., builder of the Motorette, has leased the entire north wing of the Cheney silk mills at the corner of Morgan and Market streets. The Kelsey plant was first located on the second floor of the north wing, now the whole wing will be devoted to the usage of the Motorette builders.

Rubber Plant Almost Ready—The plant of the Kelly-Racine Rubber Co., of Racine, Wis., is so far completed that machinery is now being installed and actual operations will begin by January 1. The plant is adjacent to that of the Mitchell-Lewis Motor Co., which brought the concern into being. The total cost will be in the neighborhood of \$250,000. The capital stock is \$500,000.

Find Plants in Good Shape—The recent inspection of the Pontiac plants controlled by the General Motors Co. by the directors of the corporation proved highly satisfactory. The Oakland Motor Car Co., the Cartecar Co. and the Welch Motor Co. were found to be in a flourishing condition. At the Oakland plant the directors found 3,700 cars had been contracted for delivery before June 1 next. The capacity of the plant will be taxed to the utmost to fill the orders now booked. The Cartecar Co. is sold up, orders having been received sufficient to keep the shops busy every hour. The Rapid Motor Vehicle Co. is at work on the new 1911 models and looks for the best season since the organization of the company. The Welch plant also has an unusually large number of orders.

The inspection party comprised Vice-President W. C. Durant, of Flint, and Directors J. J. Storow, of Boston; Albert Strauss, of New York; M. J. Murphy, of Detroit; W. J. Mead, of Detroit, and Thomas Neal, of Lansing.

Packard Shipments—The Packard Motor Car Co. announces that during the first 6 months, June to November inclusive, of the 1910 season, it shipped 1,140 cars; during the corresponding period of the 1911 season it shipped 1,589 cars.

Case Plant Busy—The motor department of the J. I. Case Threshing Machine Co., at Racine, Wis., formerly a separate company known as the Pierce Motor Co., is rushed with orders and the entire force has been placed on a 12½-hour day schedule.

Fire at Madison—The plant of the French Battery Co., of Madison, Wis., was damaged \$20,000 by fire last week. The loss is entirely covered by insurance and the plant will be rebuilt at once. In the meantime the concern is using the former plant of the Constantine Mfg. Co., and there will be little delay in filling orders. About \$10,000 worth of batteries on hand were badly damaged. The company has been working night and day, employing 100 men, in order to keep pace with the rush of orders. The capacity was 6,000 dry cells daily, besides storage and accumulators.

New Velie Factory—A new factory covering a ground area of 9 acres, costing \$160,000, and equipped with new machinery for the manufacture of motors and clutches has just been completed by the Velie Motor Vehicle Co. at Moline, Ill. The building is 450 by 100 and of reinforced concrete construction throughout. The Velie motors heretofore have been manufactured by the American and British Mfg. Co., of Bridgeport, Conn., but from this time on will be made in Moline. Among the new machinery to be installed are: Heald cylinder grinders, Norton valve tappet grinders, specially designed Beaman & Smith boring mills, five-spindle

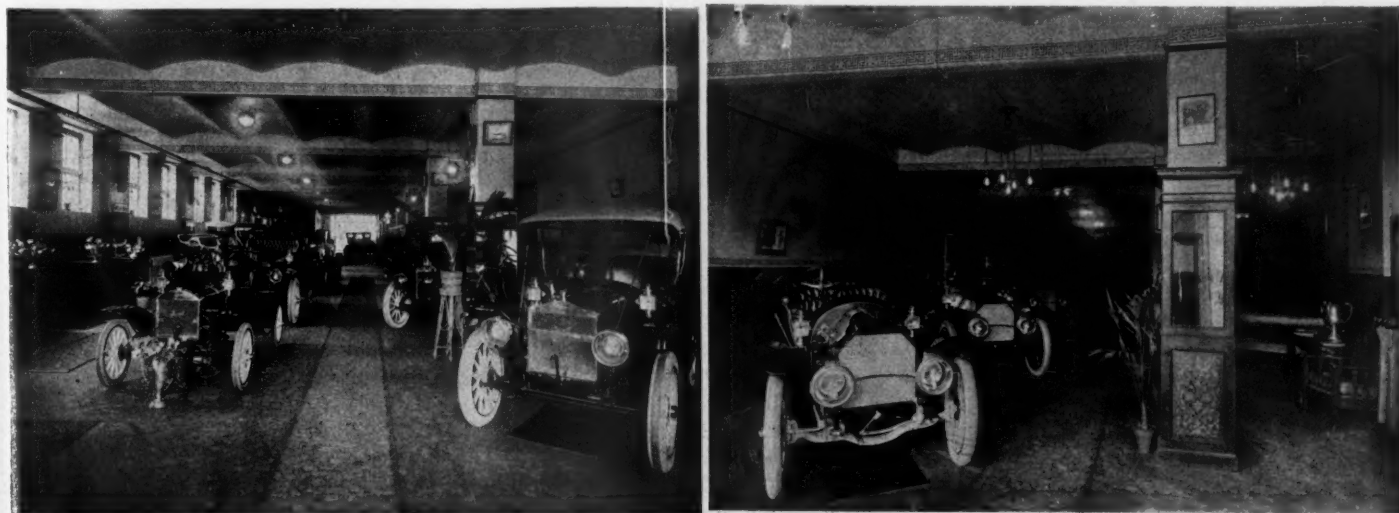
Ingersoll cylinder milling machines and Pratt & Whitney automatic piston machinery. The new plant, which will have an annual capacity of 3,000 motors, will be in operation within 3 weeks.

Fields Goes to New York—Harry E. Fields, vice-president of the Hartford Rubber Works Co., has resigned and on January 1 will become manager of the New York office of the Rambler.

Ready for Big Year—The Gramm Motor Truck and Car Co., which is just completing a \$300,000 factory at Lima, O., will start off in January with a force of 400 men. The plant is designed to employ 1,000 men with a capacity of 5,000 cars annually. The plant was recently removed from Bowling Green.

Owosso Wants Receiver—The board of directors of the Owosso Motor Co., of Owosso, Mich., has applied to the courts for the dissolution of the company and the appointment of a temporary receiver. The board recommends the appointment of the present superintendent of the company, J. P. Waters, for the position. There will be a hearing in the matter in the circuit court March 7. It is not the intention of the company to go out of business, according to the officers.

Will Make Cars—After nearly a year spent in preliminary experimenting and testing of its proposed product, the Havers Motor Car Co., of Port Huron, Mich., announces a six-cylinder roadster to sell at a medium price. The company, which has secured a plant covering 70,000 square feet of space, is officered as follows: F. E. Beard, president; H. L. Stevens, vice-president, and Andrew J. Murphy, secretary and treasurer; E. E. Havers, factory superintendent. The advisory board consists of: Henry McMorran, president Port Huron Savings Bank; H. G. Barnum, president First National Bank; Lincoln Avery, director St. Clair County Savings Bank. The company is organized under the laws of Michigan, with a capital stock of \$60,000, which will be increased later as conditions warrant.



INTERIOR VIEWS OF NEW SALESROOMS OF UNITED MOTOR NEW YORK CO., RECENTLY OPENED



Brief Business Announcements

LOUISVILLE, Ky.—P. W. Barr has taken the agency for the Fritchle electric.

Baltimore, Md.—The Cooper & Upton Co. has been organized for the purpose of handling the Moon car.

Philadelphia, Pa.—The Michelin Tire Co. has moved into its new garage at 1304-6 Race street with C. W. Scott as branch manager.

Washington, D. C.—The B. F. Goodrich Co. has opened a branch house at 1702 Fourteenth street, N. W., with B. A. Thurin in charge.

Cleveland, O.—The Regal branch opened an agency in Coshocton county this week. F. B. Thomas was appointed agent for the full Regal line.

Boston, Mass.—O. A. Lawton has been appointed permanent manager of the Franklin branch in Boston to succeed A. B. Henley, who resigned recently.

Toledo, O.—A Toledo branch has been opened in the Michigan building on Madison avenue by the B. F. Goodrich Tire Co. George H. Wood will be in charge.

Youngstown, O.—George Caniff, sales manager of the American Auto Sales Co., has opened an agency in Youngstown for the American and Great Western cars.

Providence, R. I.—Peleg Brown, well known in the horse world at Rhode Island, has gone into the motor business and has taken on the Oldsmobile for the state.

Columbus, O.—The Kaiser Motor Car Co., which has been operating a garage and repair shop at 30 West Main street, has taken the central Ohio agency for the Bergdoll.

Indianapolis, Ind.—The Gibson Auto Co. has arranged to handle the Marion exclusively during the coming season. The company will control Indiana, Ohio, Kentucky, eastern Illinois and southern Michigan.

Toledo, O.—The Dusseau Fore and Rear Drive Auto Co. announces that it expects to be building cars by March 1. The first output will be pleasure cars, but commercial cars will receive attention within a short time.

New Britain, Conn.—The I & F Motor Car Co., which conducted its business in a part of the quarters formerly occupied by the Dean Steel Die Co. on Church street, has moved to Branford, where the business will be conducted in the future.

San Francisco, Cal.—The Frank O. Renstrom Co., whose garage and salesroom on Stanyan street opposite Golden Gate park was destroyed by fire a couple of weeks ago, is now located at the corner of Van Ness and Golden Gate avenues, in the building which it formerly occupied as a

branch. Although Renstrom's loss in the fire was heavy, he is already on his feet again and ready for business.

Baltimore, Md.—William Heise is to erect a two-story brick and stone garage at 551 Kirby lane to cost about \$2,000.

Boston, Mass.—C. E. Wheeler, eastern sales manager of the Reo and Owen cars, is to make Boston his permanent headquarters.

Jacksonville, Fla.—Joseph H. Walsh, 12 East Adams street, has secured the distributing agency for Firestone tires and demountable rims.

Boston, Mass.—Fred Graves has been made manager of the truck department of the Alvan T. Fuller Co. in Boston, agent for the Packard.

Louisville, Ky.—The Louisville Automobile Co., agent for the Hupmobile in Kentucky, has established sub-agencies at Lexington, Bardstown and Harrodsburg.

Baltimore, Md.—The Lozier car has entered the Baltimore field again. It is being handled by the Lozier Motor Car Co., and Edwin Weischmann is local agent.

Stoughton, Wis.—Jokum Johnson has been appointed district agent for the Buick, White and Olds, under the direction of the Hokanson Automobile Co., of Madison, Wis.

Port Washington, Wis.—The Ozaukee Automobile Co. has been organized at Port Washington and will be district agent for the Ford. A branch has been established at Belgium, Wis., and garages will be maintained in both towns.

Cleveland, O.—The Hewitt Motor Truck Co. has been incorporated with an authorized capital of \$10,000 to manufacture and sell all kinds of motor trucks and cars by W. C. Molin, John H. Price, M. I. Scott, Edwin G. Guthery and K. T. Bambeby.

Columbus, O.—The Columbus Taxicab and Service Co. has been incorporated with an authorized capital of \$25,000 to operate a taxicab and motor livery business by J. G. Orr, Charles M. Peters, Burch D. Huggins, E. N. Huggins and Daniel H. Sowers.

Coshocton, O.—The Vickers Motor Car Co. has been incorporated with an authorized capital of \$25,000 to manufacture and sell all kinds of motor cars and accessories by Eugene H. McMasters, Carl B. Vickers, William C. Myers, Homer H. Kline and J. G. Kline.

Columbus, O.—Rapid progress is being made on the model sales agency and garage being erected by Oscar Lear on East Long street. The first floor will be used for the garage and sales rooms and will be flooded with light. The second floor will contain the repair shop and the paint shop and the upper floors will be for

residence purposes. The construction will be fireproof throughout.

Cleveland, O.—The Hupp Motor Sales Co. will locate in its new quarters on December 1.

Omaha, Neb.—The Wallace Automobile Co., agent for the Stearns, has moved to a new location at 2203 Farnam street.

Columbus, O.—Rapid progress is being made on the large garage building being erected by Dr. W. D. Hamilton on North Fourth street.

South Kaukauna, Wis.—Fred Hoehne has opened a public garage, salesroom and livery under the management of his sons, Otto and Herman.

Kansas City, Mo.—J. F. Martin is now managing the Kansas City branch of the Buick Motor Co. since the promotion of R. H. Collins to a salesmanagership at the factory in Flint.

Portsmouth, O.—M. A. Crawford and Wallace Reigel have established a motor livery company which will furnish motor cars for all purposes. Several cars have been placed in service.

Youngstown, O.—The Kelly Automobile Co. has been incorporated with an authorized capital of \$15,000 to buy, sell and exchange cars and operate a garage by R. M. Kelly, Jr., Earl F. English, Anna B. Kelly, R. D. Gibson and W. F. Gibson.

Cleveland, O.—The Callen Co-Operative Wheel Co. has been incorporated with a capital of \$50,000 to manufacture and sell vehicle wheels of all kinds and motor accessories by Charles Callen, Clara L. Callen, Edwin A. Callen, George A. Callen and C. Cole.

Milwaukee, Wis.—William C. Engel is building a large garage and repair shop on Sixty-second avenue between Greenfield avenue and Elm street, West Allis, a suburb of Milwaukee. The building is 30 by 50 feet in dimensions and of concrete construction.

Syracuse, N. Y.—The Willis Motor Car Co. has moved into its new garage at 628 Montgomery street. The Selden and Baker electric, which have been represented in Syracuse by the Central Auto Sales Co., will be taken over, and J. Rathbun, who has been local manager for the former company, will now assume the position as garage manager of the Willis company.

Chicago—The Quality Car Co. has succeeded to the Premier Sales Co. at 2329 Michigan avenue and will handle the Premier and Moline. This does not mean the Moline has abandoned its Chicago branch, which will share quarters with the Quality company, in charge of W. J. Boone. The Quality company will sell Molines locally, independent of the branch, although both cover much the same territory. The branch.

however, also has jurisdiction outside of Chicago.

Philadelphia, Pa.—E. V. Stratton has resigned as Philadelphia manager of the Studebaker branch.

Richmond, Va.—The Merchants' Motor Delivery Co. is the latest motor concern to secure a charter here. It will be located in Richmond.

Baltimore, Md.—Frederick Conrad, 1221 North Caroline street, has purchased the old Skillman bakery property at 1516-24 North Regester street, which he will remodel into a garage.

Washington, D. C.—The Pope Automobile Co. has been appointed agent for the Columbus electric, and in addition to this make will also handle the Matheson, Pope-Hartford, Everitt and Oakland.

Baltimore, Md.—The Shaab Automobile Co., which has the Baltimore agency for the Stoddard-Dayton, is preparing to move into a new garage, opposite the present one, on Mount Royal avenue, west of Maryland avenue.

Boston, Mass.—The S. R. Bailey Co. has secured the New England agency for the new Edison battery and offices and salesrooms will be opened at 1024 Boylston street shortly. George W. Holden is in charge of this department of the company.

Zanesville, O.—Work has been started on the construction of the new Charles A. Fritz garage at 17-19 North Sixth street. The building will be three stories, brick, wood only being used for the floors and three-ply rubber for the roof, and will cost \$7,710.

Cincinnati, O.—The Imperial Motor Car Co. has been incorporated with an authorized capital of \$150,000 to operate garages and sales agencies and handle accessories by Harry C. Strauss, Frank H. Lamb, Jacob Straus, B. Chatten and Joseph C. Kinze.

Indianapolis, Ind.—The Everitt will be distributed in Indiana during the coming season by Cecil E. Gibson, such arrangements having just been completed. Mr. Gibson is identified with the Gibson Auto Co., the Cecil E. Gibson Automobile Mfg. Co. and the Delaware garage.

Syracuse, N. Y.—T. E. Willis has taken over the agency of the Baker electric, the Oakland and the Oldsmobile. The Central Auto Sales Co. formerly handled these cars, but it has gone out of business. Mr. Willis will conduct his enlarged business in a six-story garage at 628 Montgomery street.

Brooklyn, N. Y.—Plans are being filed for a three-story addition to the present building of Bishop, McCormick & Bishop, the local agents for the Ford and Cole cars. This structure will be connected with the old quarters at 18-20 Halsey street. On the first floor will be the salesroom for cars the firm handles, and will measure 50 by 35. The second floor will be devoted to a stockroom and repair shop.

and the third as a garage in addition to the large storeroom now in use.

Kenton, O.—C. E. Nash, who has disposed of his interest in the Kenton Auto and Electric Co., will enter in the motor livery business in Kenton.

Washington, D. C.—The Barnard Motor Co., agent for the Stoddard-Dayton, has taken possession of its new salesroom at 1612 Fourteenth street, N. W.

Toledo, O.—The Standard Automobile Co. has opened a branch on Madison avenue for the exclusive handling of the Packard. William Love is in charge.

Hartford, Conn.—The Stearns, heretofore unrepresented in this section, has been taken on by Richard H. Skinner with offices in the Connecticut Mutual building.

Stoughton, Wis.—The Charles Seffens Top Co. will increase its capacity next spring. During the past year more than 500 tops for motor cars have been manufactured for home consumption.

Boston, Mass.—Walter T. Emmons, who handled the Herreshoff racing car on its campaign last summer, has joined the Taylor Motor Car Co. of Boston which has taken on the Herreshoff for New England.

Cincinnati, O.—The Western Compound Co. has been incorporated with a capital of \$100,000 to manufacture and sell all kinds of rubber articles by Henry W. Jones, John E. Pittz, J. Albert Mauss, Robert F. Jones and Harry F. Taylor.

Cincinnati, O.—The Jungelas Automobile Co. of Cincinnati has been incorporated with a capital stock of \$10,000, to operate a sales agency and garage by William C. Jungelas, Edward H. Jungelas, R. E. Morrison, Carrie Jungelas and Edna Jungelas.

Milwaukee, Wis.—The Auto Supply Co. has opened its place of business at 127 Second street and will handle a line of accessories and supplies. O. P. Fishedick is president and J. B. Babcock secretary and treasury, with whom is associated W. H. Lane, formerly of the Rambler garage.

Recent Incorporations

New York—Motor Safety Crank Co., capital stock \$50,000; to manufacture motors, engines and accessories, etc.; incorporators, M. G. Worth, F. A. Linn and G. Reif.

Rochester, N. Y.—Flower City Automobile Co., capital stock \$5,000; directors, George V. Kondolf, Irving F. Hoyt, August Kalofski, Thomas J. McGovern, Charles A. Schwalb and Archibald Holley.

Philadelphia, Pa.—Aspinwall Automobile and Garage Co., capital stock \$7,500.

Cincinnati, O.—Jungles Automobile Co., capital stock \$10,000; incorporators, William C. Jungles and others.

Indianapolis, Ind.—Empire Tire Co., capital stock \$500,000; to sell motor car tires; president, C. H. Semple.

Boston, Mass.—Basile Automobile Co., capital stock \$150,000; incorporators, C. Basile and J. Santosuosso.

Youngstown, O.—Kelly Automobile Co., capital stock \$15,000; incorporators, R. M. Kelly, Jr., and others.

Chicago—Batten-Dayton Motor Co., capital stock \$125,000; to manufacture motors and accessories; incorporators, W. O. Dayton, M. A. Dayton and E. S. Carr.

Chicago—Ames Motor Car Co., capital stock \$25,000; incorporators, Vincent Bendix, William W. Loomis and Matthew Mills.

This company has already taken the state agency for the Rayfield carburetor.

Cincinnati, O.—The Cleveland Timeset Co. has opened a branch in Cincinnati.

Burlington, Wis.—The Automobile Supply Co. has been appointed agent for the E-M-F and Flanders.

Simsbury, Conn.—J. T. Curtiss & Co. of Simsbury have taken the agency of Hartford county for the Sibley.

Fort Worth, Tex.—The Southern Motor Works has opened a distributing branch in this city at 707 Commerce street.

Washington, D. C.—The Moline agency, controlled by Wine & Benson, is now located at 1312 Fourteenth street, N. W.

Atlanta, Ga.—The Atlanta branch of the Fisk Rubber Co. has moved from its old place at 103 North Pryor street into new quarters at 17 Houston street.

Boston, Mass.—R. B. Davis, formerly with the Maxwell, but more recently with the Regal in Boston, has resigned to take a position with Frank E. Wing, who handles the Marmon in Boston.

Boston, Mass.—Peter Cole, formerly of Chicago, has accepted a position as superintendent of the maintenance department with Morton H. Luce of the Velie Motor Vehicle Co. of the New England states.

Boston, Mass.—H. G. Bereau, formerly at the Maxwell factory at Providence, R. I., has been appointed assistant manager of the Boston branch of the United Motors Boston Co. as an aid to Manager F. J. Tyler.

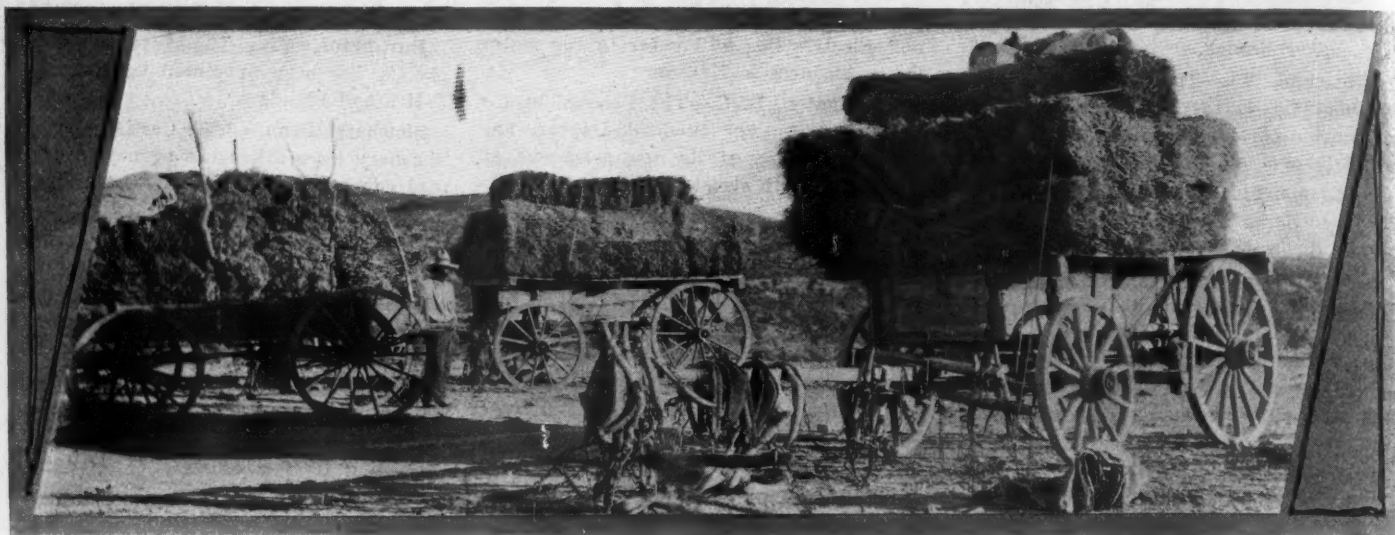
Waupun, Wis.—Landall Brothers, implement dealers, have decided to engage in the motor car business and will erect at once a large building to accommodate this and the other lines of business. The new business block will be 66 by 70 feet, two stories and basement, of concrete construction.

Syracuse, N. Y.—The Kerr-Doane Motor Co. is about to move into its new garage at the corner of South State and Cedar streets. The building is 60 by 120, and is constructed of steel and tapestry brick. The garage proper will accommodate forty-five cars and \$500,000 worth of merchandise can be stored therein.

Long Beach, Cal.—W. L. Lynd has leased a lot north of the Y. M. C. A. building on Locust avenue on which he will construct a \$7,000 garage. It will be 50 by 150 feet, brick garage, fireproof roof. Bert Dunbar will put up for Mr. Lynd a workshop separate from the garage proper; the front 30 feet of the garage will be two stories.

Chicago—The National Automobile Co., at the head of which are J. H. Seek and C. W. Caldwell, representing the National at 1233 Michigan avenue, has taken on the Falcar in Chicago territory. The company has moved into larger quarters at the northwest corner of Michigan avenue and Fourteenth street, formerly occupied by the Kissel.

GUAYULE INDUSTRY IMPORTANT ONE IN TEXAS



HAULING GUAYULE SHRUB TO RUBBER FACTORY AT MARATHON, TEXAS

MARATHON, TEXAS, Dec. 12—Gathering the guayule shrub to supply the large rubber factory at Marathon is an important industry in this part of Texas. The territory where this valuable shrub grows wild extends for a radius of 50 to 200 miles around Marathon. It is cut upon the ranches, baled and hauled in wagons to the factory. On each wagon is loaded from 6,000 to 8,000 pounds, or 3 to 4 tons. The market price of the shrub was recently as high as \$150 per ton, but it now sells for something less than that, the reduction being due to the fall in the price of crude rubber.

The great demand for this desert shrub, which was considered worthless until a few years ago, is causing the lands to be ruthlessly depleted of the product. Upon a few of the ranches of this section steps have been taken for the further propagation of the shrub, but in most instances it is being pulled up root and branch, leaving

nothing behind for starting a new growth. When the fact is considered that with proper attention an average of 2 tons of the shrub can be grown upon land that is unfit for almost any other purpose and that this yield can be obtained every 2 to 3 years, it is considered remarkable that so little attention is given to making it a permanent future source of revenue. Two years ago the state of Texas sold all the guayule shrub growing upon several million acres of public domain in this region for \$60,000. The purchaser has already realized a profit of several hundred thousand dollars upon his investment. It is these state lands, chiefly, that are being entirely depleted of the shrub.

In the upper Rio Grande border region of northern Mexico, where the guayule rubber industry has made such wonderful strides during the last few years, much attention is being given to insuring a permanency of the supply of the raw product. The Mexican government has established an agricultural station at Juarez, where successful experiments have been made in propagating the shrub. It has been found that a new growth can be obtained both by seed and by cuttings. Romulo Escobar, who has charge of the experiment station at Juarez, advocates not only seeding for the reproduction of the plant, but also the leaving of a part of the plant when the shrub is gathered. He says that a few plants left on every acre of ground will in a short time produce enough seed to entirely re-seed the tract. He also advocates the planting of guayule through the semi-arid region of northern Mexico, in order that there may be a constant increase of the supply for the rubber factories that are now in operation and others that may be estab-

lished in this section in the future. Teofilo A. Delgadillo, of San Tibureio, state of Zacatecas, Mexico, has also made successful experiments in propagating the guayule shrub upon his large ranch at that place. He has used the method of planting the leaves and broken bits of limbs of the shrub. The plant also grows readily from cuttings, he says, and he has planted a considerable acreage in this manner.

In addition to supplying the rubber factory at Marathon, large shipments of the shrub gathered in this section have been made to rubber factories in Mexico. The shrub is also being used for manufacturing rubber by a factory at Akron, Ohio. It is stated that the latter concern used the shrub for experimental purposes mainly, and that it has in view the establishment of a large factory at Marathon or Alpine, Texas. Its representatives have been in the field for some time securing contracts from ranch owners for the use of the shrub.

DECISION OF TRADE INTEREST

Buffalo, N. Y., Dec. 13—A decision that is of interest to car makers and agents has just been made in special term of the supreme court here by Judge Lambert in the suit of the Overland company against Gustave H. Poppenberg. The Overland company had contracted with Poppenberg to handle its cars for the season of 1909 and 1910. The latter claiming that the contract had been violated by the company, refused to pay for his last order of cars, declaring he had sustained damages through loss of rebates which, while called for in the contract have not, he claims, been given him. The Overland company then sued to recover the cars and Poppenberg filed his counter claim. To this the company demurred, seeking to eliminate the claim from the suit. Judge Lambert, however, has sustained Poppenberg, and he has a chance to establish the validity of his contention.

DEALERS HOLD BANQUET

Buffalo, N. Y., Dec. 12—At the annual meeting of the Buffalo Automobile Trade Association, the following board of directors was elected: Charles F. Munroe, John J. Gibson, J. A. Cramer, Ralph A. Brown, George Ostendorf, A. D. Meyer and E. E. Dennison. In the near future this board will meet and elect the officers. Following the business meeting a banquet took place at which Charles F. Munroe acted as toastmaster. E. C. Bull, on behalf of the association, presented gold watches to Mr. Munroe and Mr. Gibson, and a silver cigaret case to Mr. Brown in appreciation of their work for the association during the past year. Representing the Automobile Club of Buffalo, were President Lawrence Enos and Secretary Dai H. Lewis. The evening was a most enjoyable one and the results of bringing the dealers together in this manner is bound to be felt in Buffalo during the coming season.

